

FINANCIAL TIMES

EUROPE'S BUSINESS NEWSPAPER

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Howe precedent
on human
rights, Page 3

World news

Business summary

Spaniards blame Moslems for attack

Spanish authorities consider Islamic extremists the most likely culprits for a bomb explosion which killed 18 people and injured 82 at a restaurant in the outskirts of Madrid.

Interior Minister José Barrionuevo said police were treating a claim made in Beirut on behalf of Islamic Jihad (Holy War) as the "most reliable". Other hypotheses were not being discarded.

The Madrid bombing could add to evidence of links between Lebanon-based terrorists and European extremist organisations which have recently carried out attacks against Nato personnel and installations. Page 5

Neves setback
Brazilian President-elect Tancredino Neves suffered another setback, 48 hours after his seventh operation in a month. His temperature surged and his heartbeat and breathing quickened.

Lebanon battles
Artillery battles raged in the mountains outside Beirut between Lebanese troops and Christian militia, and Druze-led forces. Near Sidon, the fighting between Christian and Moslem, and Palestinian fighters eased. Page 2

Sri Lanka curfew
A dusk-to-dawn curfew was imposed in the town of Akkaraipattu in Sri Lanka's troubled Eastern Province to curb clashes between Moslems and Tamils and guerrilla attacks on security forces.

Albanian rebuff
New Albanian leader Ramiz Alia rejected an approach by the Soviet Union to improve relations which were severed by Albania in 1968. Page 3

Peru elections
Peruvians voted amid tight security in general elections expected to defeat the conservative Government of President Fernando Belaunde Terry and move the country to the left.

Paris blast
Three bomb attacks in Paris, two aimed at Israeli and rightwing targets, did considerable damage to buildings and parked cars but caused no casualties. Page 2

Chile clash
Chilean riot police clashed with students at the University of Chile in Santiago. Students hurled petrol bombs at the police who replied with tear-gas canisters and buckshot.

Swedish intruder
The Swedish navy fired at an unidentified intruder which could have been a submarine or a team of divers using an underwater vessel. The incident occurred near a semi-restricted area off Karlskrona.

Kuwait amnesty
Kuwait released 332 prisoners jailed for capital offences, under a general amnesty which excluded those charged with political crimes.

Mid-east talks
U.S. Assistant Secretary of State Richard Murphy began a round of talks with Arab leaders that may signal the start of fresh U.S. involvement in Middle East Peace efforts. Page 2

Sudan Cabinet
Military and civilian representatives held talks in Khartoum on forming a new government for Sudan. The civilians apparently remained divided over the cabinet list.

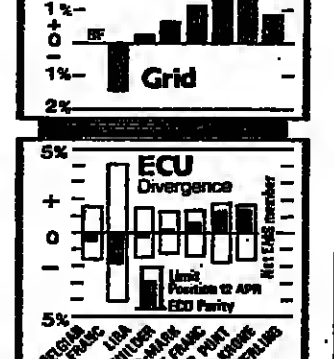
Border fortified
Israel is building new electronic detection systems and dozens of fortifications along the Lebanese border in preparation for its troop pull out.

Date set for CGE deal with Thomson

CGE, the French nationalised electronics group, is to take over the civil telecommunications interests of the Thomson electronics concern from July 1, 18 months earlier than originally agreed. Page 16

EUROPEAN Monetary System: Losses sustained by the U.S. dollar over the past week provoked a decline in the value of the weaker members of the EMS last week. The Italian lira reversed a firmer

trend seen the previous week while the Belgian franc lost ground, remaining the weakest member bound by the 2 1/4 per cent divergence from central rates. However, both currencies remained well within their divergence limits. While appreciating strongly against the dollar, the D-Mark showed only a small change in relation to its central rate.



The chart shows the two constraints on European Monetary System exchange rates. The upper grid, based on the weakest currency in the system, defines the cross rates from which no currency (except the lira) may move more than 2 1/4 per cent. The lower chart gives each currency's divergence from its "central rate" against the European Central Unit (ECU), itself a basket of European currencies.

TOKYO share prices were higher, with the Nikkei-Dow market average up 14.21 to 12,558.01. The rise in the yen benefited oils and utilities, but investors avoided blue chip companies as fears over trade friction continued.

U.S. MONEY SUPPLY: M1 rose \$1.9bn to a seasonally-adjusted \$374.7bn in the week ended April 1, 1985.

INDIA will continue to follow a highly-liberalised trade policy for the next three years following the lifting of many more restrictions on imports and exports. Page 4

PRESTWICK Holdings, the Scottish printed circuit board maker, is coming onto the market through a fixed price offer which values the company at £20m (\$24.5m). Page 22

LIVERPOOL's port is seeking another 200 voluntary redundancies among its 2,000 dockers.

BANKAMERICA, the second largest U.S. banking group, reported a 13 per cent gain in first quarter net earnings to \$114m but again noted that it continued to be plagued by higher than normal loan losses. Page 19

RELIANCE FINANCIAL Services, which is controlled by New York City investor Mr Saul Steinberg, intends to mount a proxy fight for control of Tiger International, the U.S. air services group.

SOUTH AFRICA's two leading hotel groups, Southern Sun and Holiday Inns, are to be merged to form a domestic group with 50 hotels and a virtual monopoly of the middle to upper end of the country's hotel market. Page 17

OLIVETTI chief Sig Carlo de Benedetti, who is also a financier in his own right, is joining a consortium of investors including Pirelli, the Berlusconi television group and others to take the 24.5 per cent stake of Italy's Mondadori publishing group. Page 19

MIDLAND BANK may swap its interest in the European American Bank for a bigger stake in the European Banking Group. Page 16

Thatcher boosts UK's image in incident-packed tour

BY ROBERT MAUTHNER, DIPLOMATIC CORRESPONDENT, IN NEW DELHI

THE TOUR of six Asian nations and Saudi Arabia, which Mrs Margaret Thatcher, the UK Prime Minister, has just completed, has been one of the most physically gruelling since she came to office.

In the end, even the resilient Mrs Thatcher began to show signs of failing as she flew thousands of miles across South-East Asia, often getting up at 5am or 6am to fulfil her packed programme, which left little or no time for rest.

On one crazy day, Mrs Thatcher had official engagements in three countries - Singapore, Brunei and Indonesia - dragging her weary entourage along from Commonwealth war cemeteries to sultans' palaces and presidential banquets.

Little wonder, therefore, that the mark began to slip. On one occasion she referred to the country she was speaking in as Malaysia, whereas she was actually in Indonesia. Last Saturday, when addressing the Sri Lankan parliament, she had to stop in the middle of her speech when

Mrs Thatcher returned to London last night, faced with the need to reassert her personal authority after strong criticism from the Labour Party of her behaviour during the Far East tour. The Prime Minister is expected strongly to defend her remarks about trade unions learning the facts of life during questions tomorrow in the House of Commons.

The Government's view is that foreign investors and potential buyers of UK exports may have been deterred by the miners' strike and Mrs Thatcher was simply correcting Britain's undeserved bad reputation for industrial relations.

Conservative MPs are jittery because of the revival in Labour's opinion poll standing and are apprehensive about local elections in England and Wales on May 2.

come she received in some of the capitals. The pomp and circumstance surrounding her arrivals and attendance at ceremonial occasions, not least in a country such as Indonesia with no traditional ties with Britain, would not have been out of place for a monarch.

At Jakarta airport, she stood under a canopy with President Suharto while what looked like half the

Indonesian armed forces paraded in front of her and a 19-gun salute boomed out over the whole proceedings.

What many feared would turn out to be a succession of rather boring official occasions became an incident-packed tour. Thanks to the straight talking of the Prime Minister, Fleet Street journalists looking for stories with a domestic flavour over the "dead" Easter holiday period and Britain's Labour opposition only too happy to play with impunity while the boss was away, a political ping-pong match developed between London and South-East Asia which is still continuing.

Dr Mahathir Mohamad, the quixotic Malaysian Prime Minister, who can always be relied on to provide a bit of fun when everything is running smoothly, started the ball rolling with a stinging attack on the Commonwealth at the welcoming banquet for Mrs Thatcher in Kuala Lumpur.

The British delegation, although

representing the founder and senior member of the Commonwealth, professed itself to be unperturbed because, untypically, Dr Mahathir had managed to say a few nice things about Britain, almost as an after-thought. By previous standards, the inventor of the "buy British last" policy was being extremely charming, a British spokesman said.

Not to be outdone, the still fresh Mrs Thatcher waded in with some carefully chosen comments about "seeing the unions off" during the miners' strike, a theme which she kept up until the end of her Singapore visit.

In the island state, she was joined in a chorus of anti-union rhetoric by Mr Lee Kuan Yew, the veteran Singaporean Prime Minister and patron of free enterprise, whose admiration for Mrs Thatcher's rigorous economic policies knows no bounds. Because these

Continued on Page 16

Cautious reaction by EEC to U.S. call for monetary talks

BY MAX WILKINSON AND QUENTIN PEEL IN PALERMO

EUROPEAN COMMUNITY finance ministers, meeting informally in Palermo, reacted with extreme caution at the weekend to the proposal made by Mr James Baker, the U.S. Treasury Secretary, for high level talks on the world monetary situation.

At this week's gathering of world financial leaders in Washington under the auspices of the World Bank and the International Monetary Fund, the European ministers will be holding intense discussions with the U.S. Administration.

The talks will cover how they should react to further falls in the dollar and on the need for the U.S. to take further action to reduce its federal budget deficit without precipitating renewed upheaval in the foreign exchange markets.

Ministers questioned the meaning and the substance of Mr Baker's statement and who would attend such monetary discussions. They expressed a clear preference for continuing contacts within the forum of the IMF's interim committee, which meets again on Tuesday.

None the less, Sig Giovanni Goria, the Italian Finance Minister, who chaired the talks, said the statement was "a sign of movement". Mr Nigel Lawson, the British Chancellor of the Exchequer, said on the other hand that there was "no disposition to regard the

rather confusing U.S. intervention in Paris as an important event".

The Ten are still divided on how hard to press the U.S. on the question of monetary reform, although united in their general concern at extreme exchange rate fluctuations.

Mr Jacques Delors, President of the European Commission, and Mr Pierre Berégovoy, French Finance Minister, would like to see greater U.S. co-operation on monetary stability directly linked to EEC willingness to begin talks on further trade liberalisation in a new GATT round.

Britain and West Germany oppose any such overt link.

The European ministers are agreed, however, on the need to put pressure on the U.S. to endorse their plan for an investment guarantee agency for the Third World, under the management of the World Bank.

This would be aimed at reviving the flagging level of private investment in developing countries, and so help ease the current world debt problems.

The EEC ministers' approval for the idea, first mooted by the World Bank itself, amounts to the first top-level government support for the proposal. But the Europeans are worried at the U.S. response, since any increased allocation of funds would require U.S. Congressional approval.

The investment guarantee agency is being put forward as part of the wider debate about the future role of the IMF and its relation with the leading policies of the World Bank.

This weekend the EEC ministers were unanimous that there should be greater co-ordination between the Fund's short-term programmes for curing trade deficits and the World Bank's longer-term assistance to poorer nations.

There is still substantial disagreement among them about the exact division of responsibilities, and how far the World Bank should switch its emphasis from specific aid projects to broader programmes of economic reforms.

The questions are unlikely to be resolved in Washington, and will come to a head at a special meeting of financial leaders in the G10 group of Western nations in Tokyo in June.

On that occasion, they will consider a four-part study of the world monetary system which is now nearly complete.

The weekend talks among the Ten reflected broad agreement on two of the four headings. They are:

Continued on Page 16
End to laisser faire, Page 14

Bevill, Bresler trustee finds \$5bn in deals

BY PAUL TAYLOR IN NEW YORK

THE U.S. bankruptcy trustee for Bevill, Bresler & Schulman Asset Management, the small New Jersey-based government securities dealer which failed last week, has uncovered previously unknown transactions totalling about \$5bn on the company's books.

The discovery significantly increases uncertainties over the size of losses resulting from the failure of BBS Asset Management and other BBS units which have been forced into bankruptcy by the U.S. Securities and Exchange Commission.

Already the BBS collapse, the second failure of a U.S. government bond dealer in a month, has had widespread repercussions similar to those following the collapse last month of ESM government securities, a Florida-based government bond dealer.

Worthen Banking Corp, a small Arkansas-based banking group, said its principal banking unit may suffer losses totalling \$52m after the BBS collapse.

First LaSalle Services, a Chicago futures broker, halted operations because of potential losses by one of its affiliates as a result of its dealings with BBS.

Other BBS clients, including a large number of U.S. savings banks, have begun raising the estimates of their potential losses.

Continued on Page 16
Wall Street review, Page 16

ed BBS trustee last week, said that, for the moment, he is holding to earlier estimates that its losses may total about \$198m. But he added that the discovery of the previously unreported transactions raised the possibility that the losses could be higher.

Mr Cohen said at the weekend that the billions of dollars for transactions uncovered appeared to be "paper transactions that did not appear to involve securities". He added, "we do not know if they were with affiliates or if they were even real transactions."

Of the \$5bn in previously unreported deals, about \$4m are listed on the books as assets and \$1bn as liabilities. Both figures are huge compared with earlier figures from the BBS unit, which suggested BBS Asset Management's balance sheet totalled about \$500m.

In other developments at the weekend, Worthen Bank and Trust Company of Little Rock, Arkansas, which has assets of about \$1bn and capital of \$50m, said losses resulting from its dealings with BBS would require a substantial new infusion of capital.

The bank, which had previously estimated its maximum losses from the BBS collapse at \$12.5m, said it

Continued on Page 16

Israeli Cabinet refuses to back Peres plan for Cairo talks

BY DAVID LENNON IN TEL AVIV

ISRAEL'S Cabinet was plunged into a crisis and the authority of Mr Shimon Peres, as Prime Minister of the National Unity Government, received a severe blow yesterday when the Cabinet refused to rubber-stamp his decision to send a minister to Cairo for private discussions with Egyptian leaders.

The Cabinet voted 10 to nine against the visit to Cairo this week of Mr Ezer Weizman, a minister without portfolio. That came as a total surprise to Mr Peres, who believed the trip had been approved last week by Mr Yitzhak Shamir, head of the Likud right-wing bloc, vice-premier and foreign minister in the coalition.

The Cabinet majority demanded yesterday, however, that the inner Cabinet first set out clear guidelines that would limit Mr Weizman's visit to a courtesy call and bar the minister from engaging in political negotiations.

Mr Weizman was due to fly to Egypt tonight as the guest of Mr Kamel Hassan Ali, the Prime Minister. Mr Weizman is popular with the Egyptians because of the positive role he played in the peace negotiations in the late 1970s.

The surprise move by the right-wing Likud ministers in the Labour-led coalition has provoked a



Shimon Peres

dealings with Egypt. The Labour Party takes a much more conciliatory stance towards Egypt than the Likud, which holds Cairo responsible for the present tension in relations.

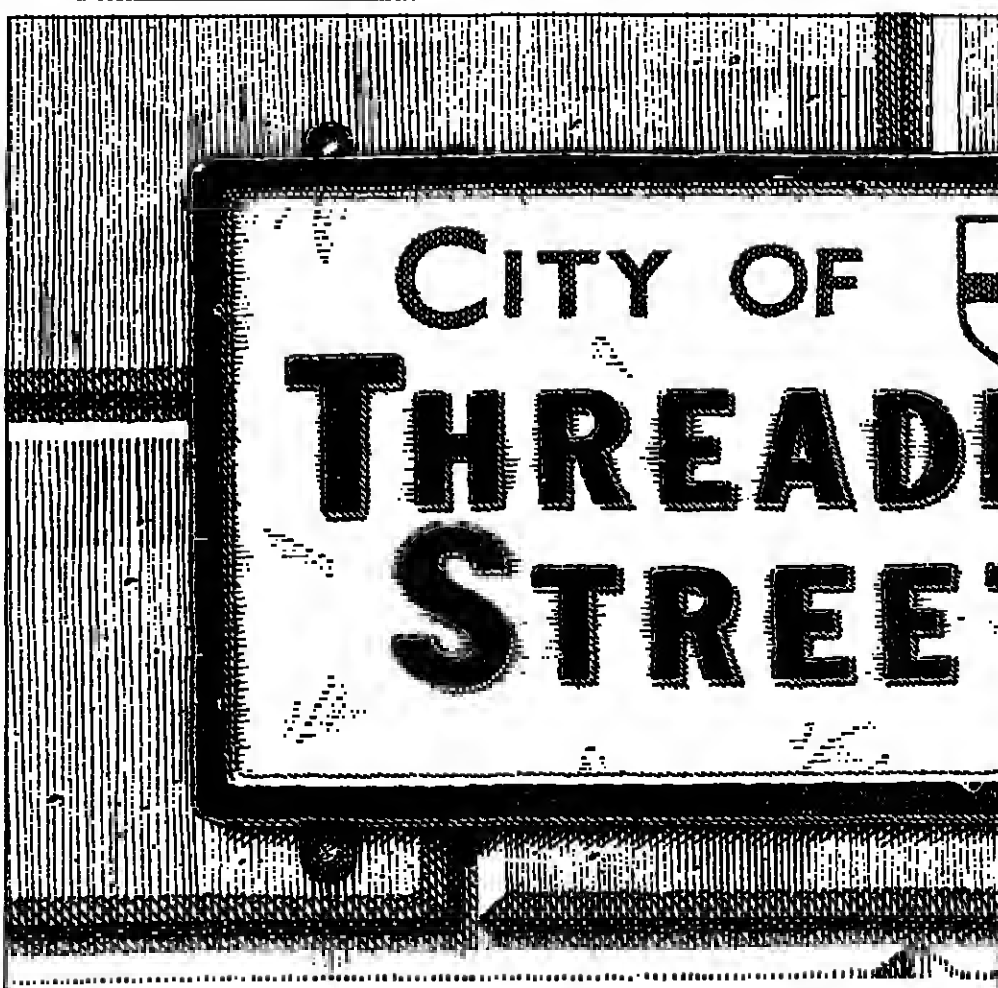
The hard-line Likud bloc is fearful that Mr Weizman, as Mr Peres's representative, will make unnecessary concessions over issues such as the disputed Golan Heights area in an attempt to improve relations between the two countries.

Mr Shamir, in explaining his decision yesterday, told the Cabinet that what he had originally approved was a courtesy visit. But, he said, the publicity and the headlines of the past few days indicated that it had taken on a much more political character.

Labour and Likud have been uneasy bedfellows after the indecisive outcome of last year's general elections made it impossible for either of them to form a government on their own and forced them to join in a coalition.

There have been frequent angry exchanges between these basically opposed parties in recent months over issues ranging from the economy to the withdrawal from Lebanon.

U.S. 'explores' peace talks; Beirut battles, Page 2



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OVERSEAS NEWS

Sudanese central bank governor dismissed

BY OUR KHARTOUM CORRESPONDENT

BANKERS in Sudan believe that an immediate result of the military coup earlier this month will be the dismantling of the Islamic banking system, introduced by former President Gaafar Nimeiri in 1983. The governor of the Sudanese central bank was dismissed by the new regime last week and replaced by his deputy, Mr Mahdi el Fakhi, who is expected to announce the change shortly.

It could also encourage the return of a large quantity of ex-patriate funds at present invested abroad. The government news agency Sana reported last week that Sudanese communities throughout the Gulf states were setting up committees to raise funds to help the country overcome its economic difficulties.

A return to Western-style banking is likely to result in a large movement of funds out of the Islamic banks and into these international banks which decide to go back to traditional practices, in particular the use of interest which is banned under Islamic Sharia law.

Since Sharia law we introduced bank loans have been negotiated on a profit sharing basis. The system had the

effect of reducing bank liquidity, prompting massive transfers of hard currency to accounts abroad. Credit facilities were difficult to obtain and import licences impossible. In February this year the Government froze all foreign currency accounts in an attempt to halt these transfers.

The one bank to have benefited from Shariah law has been the Fais al-Islam Bank, supported in large part by the Muslim Brotherhood organisation. During the demonstrations leading up to the coup the bank was chosen as a particular target by the

crowd, and all its windows were broken. Rumours have been rife that the Muslim Brotherhood had been using favourable credit facilities obtained from this bank to speculate on the market for dura, a staple food. More than 6m people estimated to be threatened by starvation in east and west Sudan are dependent on dura for their food supply.

A decision on the Islamic banking practices could give an early indication of how far the new Government is prepared to go in changing the Islamic constitution, which at present is suspended.

Five die in S. African townships as Tutu condemns black violence

BY ANTHONY ROBINSON IN CAPE TOWN

AT LEAST five people died and police made dozens of arrests in rioting and looting in the townships of Cape Town on Saturday. The violence followed the dismissal of the township council by the apartheid government.

But a large police and army cordon around the township of Kwanobuhle, near Ditzingen, in the Eastern Cape, helped to ensure that the mass funeral of 19 blacks killed by police on the 25th anniversary of the Sharpeville massacre on March 21 took place without violence.

A crowd estimated at over 60,000 poured into Kwanobuhle on Saturday for the mass funeral at which Bishop Desmond Tutu, the Anglican Archbishop of Johannesburg, and the Rev Allan Boesak, president of the World Alliance of Reformed Churches, and other black and white clergy officiated.

In his funeral address, Bishop Tutu strongly criticised the violence used by angry black crowds against the lives and properties of black councillors, policemen and officials.

"I am opposed quite vehemently to all forms of violence, including that which seeks to overthrow the system of apartheid. I call upon you to realise that by burning bodies we are allowing our enemies to rejoice. Let us not use methods used by the enemy," he told the crowd.

Despite the Bishop's plea for non-violence, a crowd of rioters estimated by police as 500-strong attacked the home of a black policeman in a township near Ditzingen on the night of the funeral. Police said that the officer fired in self-defence. Two black people died on their way to hospital, and at least four were wounded.

Similar incidents were reported in other townships in the Eastern Cape, at the railway junction of de Aar, in Cape Province, and in other townships as widely spread as Kimberley, the diamond-mining town in the centre of the country, and Daveyton, near Johannesburg.

Meanwhile, in the Cape Town

repeal of the 1949 Mixed Marriages Act and Section 16 of the 1957 Immorality Act, which outlaw mixed marriages and sexual relations across the colour line is expected to be proposed by a parliamentary joint committee of the white, Asian and Coloured Houses.

The committee's findings will be announced before a joint session of the tri-cameral Parliament. The Government is expected to accept its recommendations as further evidence of its intention to repeal the more offensive aspects of apartheid legislation.

What is not clear at this stage is whether the Government will subsequently agree to further changes in key related areas of apartheid, such as the Population Registration Act and the Group Areas Act, which classify people on racial lines and dictate where they may live. Without these changes, opposition groups from all races have already said that scrapping the two acts is merely tinkering with apartheid.

Shuttle may try satellite salvage for Pentagon

By Paul Taylor in New York

NASA OFFICIALS were yesterday considering whether to attempt to salvage a failed communications satellite released from the shuttle Discovery's cargo bay on Saturday.

The U.S. space agency confirmed yesterday that Leasat 3, a 17,000-lb communications satellite built by Hughes Aircraft and leased to the Pentagon for navy communications, had failed after being deployed by Discovery.

Nasa believes a key level on top of the satellite failed to activate on launch from the cargo bay; the lever switches on the satellite's batteries, timing system and deploys its antennae, rendering Leasat 3 useless.

The latest hitch in the shuttle programme comes during increasingly tough competition for satellite launches between Nasa and ArianeSpace, the European space agency.

Yesterday, Nasa scientists were conducting water-tank simulations of the problem and considering various options, including the possibility of a space salvage mission. Shuttle astronauts last November recovered two disabled communications satellites, bringing them back to earth for refurbishment and resale.

Discovery, which is manned by a seven-member crew including Senator Jake Garn, is midway through a five-day flight and has already successfully launched another communications satellite.

One possibility being considered by Nasa was to extend the mission by two days, manoeuvre Discovery close to Leasat 3 and swing one of the astronauts out on Discovery's robot cargo arm close enough to physically flip the errant lever. Such a rescue would be highly difficult because the satellite is spinning. "It would be like trying to grab hold of a ring on a spinning carousel," said one space scientist.

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U.S. starts 'exploratory' Middle East peace talks

BY TONY WALKER IN CAIRO

MR RICHARD MURPHY, the American assistant secretary of State, responsible for Middle East affairs, has begun a round of talks with Arab leaders today which may signal the start of fresh U.S. involvement in Middle East peace efforts.

Mr Murphy met yesterday with King Hussein of Jordan and will also visit Syria, Israel, Egypt and Saudi Arabia for discussions on ways to advance the peace process.

U.S. officials described Mr Murphy's presence in the region as "exploratory." But they also hinted at the possibility of Mr George Shultz, the U.S. Secretary of State, who is due in Israel on May 10, going

on to several Arab capitals if Mr Murphy's soundings indicate progress towards a resumption of the stalled peace process.

Washington has resisted attempts to "draw it back into the search for peace while Arab states are divided on the conditions. A stumbling block remains U.S. and Israeli insistence that they will not deal directly with the Palestine Liberation Organisation and its chairman, Mr Yasser Arafat.

The PLO has rejected an attempt by Egypt to find a way round the impasse by suggesting first-stage talks between the U.S. and a Jordanian-Palestinian delegation not including PLO members.

Battles erupt near Beirut

ARTILLERY battles erupted in mountains near Beirut yesterday as Mr Rashid Karuni, the Lebanese Prime Minister, blamed Israel and Christian militia for clashes around the southern port city of Sidon during the past month. Reuters reports from Beirut.

The State-run Beirut radio said shells landed in residential areas far from the front lines, but there were no immediate reports of casualties as army troops and Christian militia faced Druse-led forces.

Four people were killed and 30 wounded in fighting around

Sidon yesterday, where 64 people have died and about 250 have been injured, according to security sources, since clashes began on March 18.

Mr Karuni said Israel and the Christian militia, in revolt against Lebanese President Amin Gemayel's alignment with Syria, had ignited the Sidon trouble.

"The (March 18) revolt coincided with the despatch of Lebanese forces' fighters to Sidon and this led to the explosion of the situation there," he said.

Zaire switches economic ministers

By Peter Blackburn in Abidjan

ZAIRE'S President Mobutu Sese Seko has appointed a new economic team shortly before the scheduled talks start with the Paris and London clubs of official and commercial creditors.

The ministers of finance, foreign trade and economy have been changed only 10 weeks after their appointment at a delicate transitional stage in Zaire's economic recovery. Pressure is mounting for a relaxation of the austerity measures in force in the country.

The reshuffle emphasises the Government's desire to successfully implement the International Monetary Fund's 12-month recovery programme, according to an official commentary. It adds that the main objectives of the previous 15-month SDR 228m (£182.6m) IMF arrangement, which expired in March, were fulfilled.

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801 to 810	841 to 850	881 to 890	921 to 930	961 to 970	1001 to 1010	1041 to 1050	1081 to 1090	1121 to 1130	1161 to 1170
1201 to 1210	1241 to 1250	1281 to 1290	1321 to 1330	1361 to 1370	1401 to 1410	1441 to 1450	1481 to 1490	1521 to 1530	1561 to 1570
1601 to 1610	1641 to 1650	1681 to 1690	1721 to 1730	1761 to 1770	1801 to 1810	1841 to 1850	1881 to 1890	1921 to 1930	1961 to 1970

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OVERSEAS NEWS

Madrid bombing linked to Islamic Jihad extremists

By DAVID WHITE IN MADRID

SPANISH authorities believe Islamic extremists are most likely to be responsible for a bomb explosion which killed 18 people and injured 32 at a restaurant on the outskirts of Madrid on Friday night. It was the worst terrorist attack in recent Spanish history.

Those killed by falling masonry were all Spanish, although the restaurant was frequented by American servicemen and their families from the nearby U.S. Torrejon air base.

Sr Jose Barrionuevo, the Interior Minister, said yesterday that accidental causes had been ruled out and that police were treating a claim made in Beirut on behalf of the Islamic Jihad organisation as the "most reliable". Other hypotheses, however, were not being discarded.

The Beirut claim was initially received with scepticism by Spanish foreign ministry officials; but the Madrid bombing could add to evidence of links between Lebanon-based terrorists and European extremist organisations which have recently carried out attacks against Nato personnel and installations.

The Beirut statement said the attack was the second carried out recently by Islamic Jihad—presumably referring to the bombing of a Paris cinema during a Jewish film festival last month—and that attacks would continue until the last Israeli soldier left southern Lebanon. They said it was a reprisal for the car bomb which killed 92 people in a predominantly Shiite Moslem suburb of Beirut on March 8. Previous attacks included an Islamic Jihad—which Middle East experts believe may be a cover for different groups rather than an organisation in its own right—include those against U.S. and French troop quarters and against the U.S. embassy in Beirut in 1983 and 1984.

Sr Barrionuevo said about

Socialists start revision of rejected abortion law

By OUR MADRID CORRESPONDENT

THE FIRST moves are under way to formulate a new law permitting abortion under certain limited circumstances in Spain. They follow Thursday's controversial rejection by the Constitutional Court of the reform passed 18 months ago by the Socialist-dominated parliament.

As conservative Catholics celebrated their first taste of victory since the Socialists came to power in 1982, Sr Gregorio Peces-Barba, Speaker in the lower House, proposed that Congress's justice committee start work on a revised law which could get around the court's objections.

However, his forecast that a

new law could go through parliament this year was challenged by a spokesman for the right-wing Popular Alliance.

Conflicting interpretations were made of the sentence which overruled a change in the penal code removing penalties for abortions undertaken in the cases of rape, danger to the mother's life and malformation of the foetus.

Leading government figures said the judgment did not prevent the legislation of abortion in these circumstances, provided that extra guarantees were written into the law protecting the "right to life" of unborn children not strictly covered by these cases.

Albania rejects Moscow condolences

By Leslie Collis in Berlin and Mark Baker in Peking

MR RAMIZ ALIA, the newly-chosen leader of Albania, has brusquely rejected an approach by the Soviet Union to improve relations which were severed by Albania in 1968.

Mr Alia was chosen on Saturday at a central committee session of the Albanian Workers' Party to succeed Mr Enver Hoxha, who died on Thursday after ruling the highly independent Communist nation for 40 years.

Radio Tirana said the Government had rejected a condolence message sent by the Soviet Union in which Moscow expressed the hope that relations between the two countries would improve. A similar condolence telegram sent by Washington was also flatly rejected by the Tirana Government.

Albania, however, apparently did not rebuff a telegram from the Chinese leadership, expressing the wish to normalise relations, severed in the mid-1970s.

This was China's first move in what is expected to be a concerted effort to rebuild ties with Albania following Mr Hoxha's death.

News of the death was reported within hours by the official Chinese news agency, Xinhua, with details of Mr Hoxha's achievements. The Communist party newspaper, People's Daily, reported the event on its front page with a portrait in a black border.

Zhao Ziyang, the Chinese Premier, and Li Xiaonian, the President, sent a joint message of condolence to his successor, "Comrade" Ramiz Alia.

The Chinese leaders said they were "checked to learn of the untimely passing away of Comrade Enver Hoxha. His death is a great loss to the Albanian people. We wish to express our profound condolences to the Albanian Government and people," they continued.

The Chinese reporting of the death and the friendly language of the message is surprising considering the vitriolic abuse which Mr Hoxha had heaped on China and its leaders since the schism between the two countries in 1977.

The Chinese have been making tentative approaches to Albania over the past two years in an effort to revive what was once one of the strongest alliances in the Socialist fraternity.

Western diplomats believe China is seizing the opportunity of the change of leadership to press harder for expanded economic and political links.

Mr Ramiz Alia is regarded as much less of a hard-line Marxist than Mr Hoxha and has suggested recently that Albania, the poorest country in Europe, needs to build its falling economy by opening more to the world—China's recipe for economic success.

Howe sets human rights precedent

By DAVID BUCHAN, EAST EUROPE CORRESPONDENT

SIR GEOFFREY HOWE's East European tour, which ended in Warsaw on Saturday, not only cast one of the lowest-key personalities in the Thatcher Government in new and dramatic light, but may also mark a precedent for the way Western ministers handle human rights issues in the Soviet bloc.

The British Foreign Secretary spent much of his time in East Berlin, Prague and Warsaw discussing bilateral issues and arms control. Sir Geoffrey sidestepped efforts by his East European counterparts to make him criticise openly the U.S. for its Star Wars programme and pointed out the flaws which the West sees in Mr Mikhail Gorbachev's Euro-missile freeze plan.

But it was human rights that became the dramatic theme of the Howe tour: inevitable when a British minister once unkindly dubbed "Mogadon Man" is greeted by a night-time crowd at the Popieluszko grave in Warsaw shouting "Long Live England".

Clearly, the past week has helped Sir Geoffrey towards the sharper public image he has been seeking but has not so far gained from undoubted diplo-

THE STRESS which Sir Geoffrey Howe put on human rights during his two-day visit to Warsaw has drawn private praise from Cardinal Jozef Glemp, the Polish Primate, and Solidarity supporters whose British Foreign Minister was able to meet here, writes Christopher Bobinski in Warsaw.

The authorities, meanwhile, have played down the visit in the Polish media to signal their displeasure at Sir Geoffrey's visit to the grave of Father Jerzy Popieluszko, the murdered pro-Solidarity priest.

However, Mr Stefan Olszowski, the Polish Foreign Minister, did appear on Saturday morning at Warsaw's rebuilt royal castle, to which Sir Geoffrey donated a picture. Poles, however, are still keen to improve relations with Britain because of the need to raise new government credits in the West.

It was also appropriate that human rights should be so raised in the year of the 10th anniversary of the Helsinki accords and a special review next month in Ottawa of their human rights provisions.

Sir Geoffrey, to the extent that he recognised and perhaps encouraged dissidents and beleaguered churches, has incurred disapproval from his host governments. The latter's degree of tolerance varies. But the Prague authorities dislike any foreigners, particularly official ones, meeting with Charter 77 civil rights representatives in Prague and his visit to the Popieluszko grave have substantially advanced the cause of human rights in that region is less clear.

Certainly all the "non-officials" be met, whether cardinals or dissidents, believed that being recognised by a British foreign secretary would strengthen their hand in the fight with their respective state authorities against political and religious discrimination.

reliably low-key, should have behaved precisely like his junior minister, Mr Malcolm Rifkind, last autumn in having a special meeting with senior Solidarity sympathisers and visiting the Popieluszko tomb.

Sir Geoffrey and his delegation, for their part, calculated that the East European desire for a British foreign secretary to visit was such that they could get away with quite a lot on human rights. This desire will not be so great now that East Germany has had its first British foreign secretarial visit ever, Czechoslovakia its first for 20 years and Poland its first since martial law.

However, Sir Geoffrey found that all three governments he visited last week were ready to discuss their internal situations and even human rights with a West European foreign minister.

This contrasts sharply with the mind-your-own-business attitude always taken by the Soviets to Western human rights complaints and, in the view of British officials, bodes well for continued dialogue between Eastern and Western Europe, despite some inevitable ructions from the Howe trip.

PM and Saudis review economic links

By ROBERT MAUTHNER, DIPLOMATIC CORRESPONDENT, IN RIYADH

MRS MARGARET THATCHER, the Prime Minister, yesterday had talks here with King Fahd of Saudi Arabia during the last stopover of her 11-day, 20,000-mile tour of seven countries.

Her talks with King Fahd covered mainly international issues, such as the state of the world economy, with special reference to the oil and petrochemicals market, the Middle East situation, particularly the Arab-Israeli conflict, and bilateral economic relations between Britain and Saudi Arabia. Officials said that the Prime

Minister wanted to review the entire relationship between the two countries in the context of the new Saudi Arabian budget and the forthcoming five-year plan.

The British Government and British industry are anxious to improve their position on the Saudi Arabian market, and have been placing increasing emphasis on joint ventures. Mrs Thatcher, before leaving for London, issued a statement saying she looked back on the tour with considerable satisfaction. "Everywhere I have gone,

I have been made very welcome indeed. I had excellent talks with leaders of each of the countries I have visited. In each case, my aim has been to deepen our economic and political relations, and I believe that this will be the outcome of my tour."

In New Delhi, she gave an undertaking to Mr Rajiv Gandhi, her Indian opposite number, that her government would do everything "in its power" to see that militant Sikhs living in Britain would not plan violent action in India. The undertaking was as far

as Mrs Thatcher could go in answering India's demand that Britain should take steps to curb the activities of militant Sikhs living on British soil. It has always been the UK Government's position that action could only be taken if the Sikhs in question broke British law.

Mrs Thatcher assured Mr Gandhi at tele-a-telic talks lasting one hour on Saturday that Britain, like India, was deeply concerned by the "very serious problem" created by a small number of Sikh extremists in Britain.

Italy's trade deficit continues to worsen

By Alan Friedman in Milan

SIG BETTINO CRAXI, the Italian Prime Minister, yesterday opened the 68th Milan Trade Fair amid news of a more-than-doubled February trade deficit. While he expressed concern about the strength of the dollar and said he hoped it would be possible to avoid a national referendum on wage indexation, the Italian Government's statistical office announced that the country's trade balance was still deteriorating.

In February, the trade deficit totalled L3,157bn (£1,285bn), compared with L1,392bn last year. This means the Italian trade deficit for the first two months of 1985, at L5,887bn, is close to one-third of the record L19,200bn deficit for the whole of last year.

The problem is that imports spurred by last year's 2.4 per cent growth in the Italian economy, are still rising much faster than exports. Energy imports, in particular, are damaging the Italian trade performance, although the country continues to do well with its exports of textiles, clothing, and engineering products.

In February, Italy's exports grew by 20.9 per cent to L11,285bn; but imports were up by 34.7 per cent for the month, to L14,455bn.

The Milan trade fair, which this year has taken technology as its theme (with exhibits ranging from robots to fibre optics systems), has attracted nearly 7,000 exhibitors, of which 1,639 are foreign. Some 70 countries are represented at the fair, which is Italy's largest annual samples exhibition.

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WORLD TRADE NEWS

UK textile policy condemned by Hong Kong

By ANTHONY MORETON, TEXTILES CORRESPONDENT

CONTINUED British import protection against clothes and textiles from low-cost countries would only marginally help the home industry, according to the Hong Kong Government. The British problem is the result of goods coming in in increasing quantities from advanced countries, it states.

In a review of the British textile industry published today Hong Kong claims Britain's trade deficit with OECD countries, largely Western Europe and the U.S., last year, was nearly twice that with its low-cost, Far Eastern suppliers.

Before 1981, the deficit was the other way round, but in the last four years the position had changed radically.

"It is imports from OECD countries that are the main problem for Britain," it states. "Three-quarters of the UK's £1.3bn deficit with the OECD was accounted for by the EEC, where the UK should be competitive by virtue of its relatively low wages, particularly in the clothing industry."

Restricting imports of clothing, in particular, from cheap suppliers led to a rise in imports from other European suppliers, countries with which the UK was not competitive.

In a strong attack on British policy towards the Multi-fibre Arrangement (MFA), the world

agreement that regulates a large part of trade in textiles and clothing, Hong Kong claimed it was both disbonourable and ruthless.

"It took from the less poor to give to the poor while leaving the rich untouched," the review stated. This was a reference to the policy by which newly industrialised countries such as Hong Kong, South Korea and Taiwan had to give up part of their share of the British market so that less well off countries such as Bangladesh could have a bigger share.

Reducing Hong Kong's share of the British market meant that the beneficiaries were exclusively European Community suppliers, not other low-cost suppliers in the Far East.

Every textile or wool product sold in the U.S. must bear a conspicuous label informing customers of its country of origin, under regulations announced Friday by the Federal Trade Commission, AP reports from Washington.

The new rules, required by Congress, will take effect 30 days after they are published shortly in the Federal Register. From then on, garments or yarn or their packages must bear labels such as "Made in U.S.A." "Made in Korea" to identify the country where the material was obtained.

Rolls-Royce gas turbines for China

By Michael Donne, Aerospace Correspondent

ROLLS-ROYCE has won a \$15m order from the China National Aero-Technology Import and Export Corporation (Catie) for three gas turbine electricity generating sets for an oilfield development in north-west China.

This is the second such deal in 18 months, the first being for an \$8.2m generating station for a refinery in north-east China.

The latest order follows the recent British trade mission to that country, headed by Lord Young, during which Mr Dennis Jackson, Rolls-Royce's director of corporate strategy and international affairs signed a memorandum of understanding with Catie for a major growth in the company's sales to China.

The latest deal will provide the Zepu Petroleum and Chemical factory with three 12,000 kw co-generating systems, using industrial derivatives of the Spey aero-engine. The order will be fulfilled by Rolls-Royce's Industrial and Marine Division, based at Abney, near Coventry.

Glass plant order

PPG, the U.S. glass-making company, has won a contract for a \$50m float glass manufacturing plant in China that will be built in collaboration with China Southern Glass, a company owned by a number of Chinese investors. Tony Dodsworth reports from New York.

India lifts more trade restrictions

By K. K. SHARMA IN NEW DELHI

INDIA will continue to liberalise its trade for the next three years following the lifting of many more restrictions on imports and exports in a policy announced late last week that has been widely welcomed.

For the first time, the annual trade policy has been replaced by a three-year one so that businessmen can plan further ahead with the assurance that policy will not change every year.

Liberalisation of India's trade policy, particularly on imports, began about six years ago and restrictions have been progressively eased. The main changes in this year's policy are to put more items on the "open general licence" (for which im-

port licences are given for the asking).

Mr V. P. Singh, Minister of Finance and Commerce, who presented the policy to parliament last Friday, said it sought to provide a stable policy environment.

Industry circles have applauded the policy. Mr Ramakrishna Bajaj, president of the Federation of Indian Chambers of Commerce and Industry, said the policy would "accelerate technological upgradation and modernisation which will simultaneously help improve the external trade position."

India's trade deficit shows signs of remaining at the high level of \$5bn (£4bn) a year. Despite this, however, foreign

exchange reserves are rising because of high earnings from invisibles, notably remittances from Indians living and working abroad. The reserves are at the relatively comfortable level of \$5.5bn, worth roughly five months' imports.

The policy introduces a number of innovative changes to make imports and exports easier for increased industrial production and to strengthen the export base. This includes the launching of "the import-export pass book scheme" for manufacturer-exporters to provide duty-free access to imported inputs for export production.

Other parts of the policy provide for the "decentralisation" (that is, withdrawal of com-

pulsory imports by government-owned companies) of 33 items, although steel will continue to be imported by the public sector Metals and Minerals Trading Corporation.

Under the policy, 201 items of industrial machinery have been included in the list of capital goods for import under the "open general licence" to help meet modernisation and export promotion. The main sectors to benefit from this are automobiles, oilfield services, leather, electronics, jute manufacturers and canning.

The procedure for allowing imports of capital goods on a global tender basis in respect of some key industries continues unchanged.

Daewoo in \$337m deal with Libya

By Steven B. Butler in Seoul

DAEWOO Corporation has signed a \$337m (£288m) construction contract for utilities at the Uraha area of Benghazi, Libya.

The contract brings to \$430m the total of new contracts that Daewoo has signed in Libya this year alone. Daewoo has said that it was unaffected by the recent cancellation of many contracts by the Libyan Government, although a company official did say the Benghazi contract had been scaled back. The contract calls for Daewoo to construct sewerage and water supply facilities, roads and street lighting, and to install electrical cable, telephones and an exchange facility, and a pumping station. The work would start immediately and is scheduled for completion by April 1990.

According to the Overseas Construction Association of Korea, in the first quarter of the year, Korean construction companies signed a total of \$1.1bn of new overseas construction contracts, an increase of 35 per cent over the same period of 1984.

Italians win contract

ITALPIANTINI, the Genoa-based plant engineering company which is part of the IRI-Fininvest holding group, has won a £200m (£80m) contract to build a new system for the transport of materials at Egypt's El Tabbin steel plant. Alan Friedman reports from Milan.

Limits to Japan's automation potential

By IAN RODGER

JAPAN'S MAKERS of factory automation equipment are unlikely to become as important in world markets as have that country's producers of other types of machinery, according to a study by a group of London consultants.

The study of markets for robots, computer-aided design systems (CAD), flexible manufacturing systems (FMS) and machining cells suggests that system design and engineering are becoming increasingly important in these sectors, and that the Japanese have great difficulty in providing engineering services a long way from home.

The study, by Planning Research & Systems (PRS),

forecasts rapid growth in most markets for factory automation equipment. For example, the number of FMS installations in the four main Western European countries, West Germany, France, the UK and Italy, could more than double by 1990 to over 100. The number of robot systems in the four could reach 45,000 compared with 10,000 today. Even faster growth is forecast in Japan and the U.S.

Ms Vanessa Schofield, a director of PRS, said that the complexity of new factory automation systems required the supplier to work closely with the customer. The Japanese would need to establish research and development bases in Europe and the U.S. if they

wanted to compete. In our view, it is extremely unlikely that any of them will do so. At the moment, users tell us that Japanese suppliers refer software problems back to Japan, and that is not considered good enough.

The same factor will also restrict penetration by European and U.S. suppliers in each other's markets, especially in FMS, according to Ms Schofield. Already, the FMS and cell supplying industry is largely nation-based, and the study profiles the leading companies in Europe, the U.S. and Japan.

The robot and CAD markets are so far at least more international. In CAD, the leaders

General Electric Calma—are all U.S. based, and Ms Schofield doubted that would change in the near future. "In the long term, there are three Japanese companies, Nippon Electric, Mitsubishi and Fujitsu, that could pose a threat," she said.

In robotics, Unimation of the U.S. remains the world leader with over 8,000 units installed worldwide. Asa of Sweden and Cincinnati Milacron follow close behind. Japan has the largest number of robot installations in the world but its robot producing industry is very fragmented.

Supplying the Factory of the Future: Product and Market Opportunities to 1990, Planning Research & Systems, 24 Old Bond Street, London W1X 3DA.

Shippers concerned EEC rules favour shipping lines

By ANDREW FISHER, SHIPPING CORRESPONDENT

THE British Shippers' Council (BSC), representing cargo exporters and importers, is worried that new draft EEC maritime transport rules lean too far towards the protection of European shipping lines and take too little account of shippers' needs.

It has told the UK Government of its fears that the proposed EEC regulations "will be seen as unduly protectionist of the Community fleet, even to the detriment of Community industry."

But the BSC welcomed the fact that the proposed EEC maritime competition regulation had been revised so as to stress the need for competition among companies in liner (scheduled cargo service) shipping.

The EEC Commission set out its shipping policy proposals in a report including new measures "required to promote the Community's trading and shipping interests." Since 1975, the amount of world merchant tonnage under EEC member flags has fallen from 29 to around 23 per cent.

The EEC proposes to apply the provision of the Treaty of Rome to shipping. But the conference system would be given a broad exemption, because of its accepted role in liner markets. About 80 per cent of UK shippers' seaborne trade is

carried by conference lines. The BSC was unhappy, however, at the EEC proposals on unfair competition and pricing. While designed to combat unfair tactics by non-Community lines, the BSC commented: "It grants immunity to Community lines adopting unfair practices and will allow any member state to protect its own national lines to the detriment of the other member states."

The EEC report pointed out that while the world liner fleet—most traffic is containerised—rose by 21 per cent in 1984, tonnage between 1975 and 1983, that of the EEC fell around 7.5 per cent.

Non-EEC countries plan rapid fleet increases and world average container fleet utilisation is likely to drop from 91 per cent in 1981 to 77 per cent in 1986. Major lines with big expansion plans include Evergreen of Taiwan and U.S. Lines.

Another key concern of the BSC is the inclusion in the EEC policy of rules governing 100 per cent loyalty under which shippers receive special rates and treatment for shipping all their cargoes with a conference line. The BSC favours more flexible service agreements, which some conferences are now prepared to offer. "100 per cent loyalty is a complete anachronism," said the BSC.

SHIPPING REPORT

Dry cargo rates improve in the Atlantic market

By OUR SHIPPING CORRESPONDENT

SHIPPING markets were fairly lively last week, despite there being only four days of trading as a result of Easter. Dry cargo rates continued to improve on the Atlantic, while it was the small- and medium-sized ships which kept up activity on the tanker market.

Galbraith's, the London shipbroker, reported that new enquiries on the Atlantic were encouraging, though the Pacific remained quiet with little fresh business. The iron ore market strengthened, with Wednesday seeing the largest volume of new business in a single day that has been experienced for several months.

In the oil shipping sector, VLCC (very large crude carrier) movements from the Gulf were again limited. The only reported such fixture was of the World Eminence for a 240,000 ton cargo to Taiwan at Worldscale 24, similar to previous levels.

Despite rumours of some traders looking for vessels from Iran's Kharg Island terminal, made risky by the continued

Iran-Iraq hostilities, no details of any business emerged. There was more activity in medium-sized tankers from the Gulf. Galbraith's said it fixed an 88,000 ton cargo for a big UK oil tanker, the Gulf of Noumea on the Pacific island of New Caledonia and Australia at Worldscale 50, while an 80,000 ton cargo of fuel oil was fixed from Kuwait to Italy at Worldscale 70.

The most active oil loading area was the Mediterranean. But with plenty of ships around to take cargoes, rates showed no significant movement. Ships of 80,000 tons had to take low levels of scarcely above Worldscale 60 for cross-Mediterranean trips.

Texasco needed to pay only Worldscale 50 for 122,000 tons of crude oil from the West Mediterranean to the East Coast of the U.S. There was also a fair amount of activity from West Africa. In the Caribbean, there was plenty of business, but rates were again static because of the number of ships available.

World Economic Indicators

RETAIL PRICES					
(1980 = 100)					
	Feb. '85	Jan. '85	Dec. '84	Feb. '84	% change over previous
W. Germany	120.5	120.0	119.3	117.8	2.3
France	154.7	153.9	153.1	145.4	4.4
Italy	184.7	182.7	180.9	169.4	9.0
Netherlands	121.0	120.6	120.9	118.3	2.3
Belgium	138.7	137.2	136.4	131.4	5.3
UK	137.5	136.4	135.9	130.5	5.4
U.S.	128.6	128.1	127.8	124.2	3.5
Japan	113.0	112.8	113.2	111.3	1.5

Source: Eurstat

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BUSINESS LAW

State regulation of anti-trust law prevails in U.S.

BY A. H. HERMANN, LEGAL CORRESPONDENT

THE SWEET sound of reason heard recently from several U.S. courts dealing with issues of the extra-territorial application of anti-trust laws and reported in this column on March 14, 1985, was mightily reinforced a fortnight later by the highest authority, the Supreme Court of the U.S.

The court dealt with the constantly reappearing question, whether a state policy or direction can provide immunity to a private company accused of price-fixing or another conspiracy prohibited by the Sherman Act. The court abandoned the settled view, highlighted by a long series of leading cases, that a private party is not entitled to state-action immunity unless the state compelled it to act in violation of the federal anti-trust law.

From now on, to use the words of the dissenting Justice Stevens, "... a state may exempt price-fixing from the federal anti-trust laws if it clearly articulates its intention to supplant competition with regulation in the relevant market, and if it actively supervises the unlawful conduct by evaluating the reasonableness of the prices charged."

The majority justified this reversal of law by saying that it is more consistent with the principle of federalism, and that it also better serves the objectives of anti-trust laws because to recognise as defence only such acts of state which compel the party to act anti-competitively means to invite the states to make mandatory rules when otherwise they might be satisfied to issue non-compulsory guidelines.

Reading this decision in London, one immediately thinks of the Laker litigation which now seems to be approaching settlement. The Supreme Court's decision concerns price fixing by "rate bureaux" of motor carriers operating in four states of the U.S. under the supervision and with the approval of the Public Service Commission in each state.

The collective rate-making by these bureaux is authorised but not compelled by the respective states. Common carriers are required to submit proposed rates to the appropriate Public Service Commission for approval, and the rate becomes effective if this state agency takes no action within a specified period of time. If a hearing is scheduled, however, a rate will become effective only after agency approval. The State Public Service Commission thus have and exercise ultimate authority and control over all intrastate rates—in a manner not altogether different from that exercised by the UK and U.S. aviation authorities over private agreements between airlines.

The act of state which the Supreme Court considered here was therefore the act of a state within the Union, providing

immunity against federal anti-trust laws. In Laker, as in other extra-territorial cases, the acts of state at issue are those of foreign states.

Never the less, the doctrine which the U.S. courts apply to truly extra-territorial issues was originally developed when courts dealt with domestic issues of the sort which were referred to the Supreme Court in the present case. Any decision of the Supreme Court which modified the act of state doctrine in a domestic dispute can be therefore expected to influence decisions dealing with acts of a foreign state.

The Laker litigation has several strands. British Airways and the other companies sued with them would not be helped by the present Supreme Court decision in respect of allegations that they conspired to frustrate a financial rescue of Laker Airways. It is also not entirely clear whether the present decision would provide protection for any sort of price fixing but also an active supervision and evaluation of reasonableness of the prices by the state, one could argue that the decision does not provide protection for any sort of price fixing and particularly not for such price fixing which is predatory, coercive or discriminatory. There seems to be, however, little doubt that the present decision should greatly help BA and British Caledonian to defend the class actions brought on behalf of U.S. air passengers.

Although it would be daring to assume an automatic immunity for predatory pricing in general, in the particular case of Laker the new decision might help the defence by bringing the issue under the umbrella of the required state supervision.

Laker's complaint that the new air fares of its competitors were predatory was first made before the tariffs were approved. It was considered and rejected both by the UK authorities and by the Civil Aviation Authority in the U.S. Indeed, the U.S. authorities, which could review and disapprove of the fares, not only did not do so but passed for British approval. These decisions were not challenged by Laker in courts either in the UK or in the U.S. at the time. It is questionable whether, in view of the latest Supreme Court decision, the U.S. courts can go any further than to consider whether there was an "active supervision" of the anti-competitive conduct and evaluation of the reasonableness of the prices charged, and substitute their own decision as to reasonableness, etc, for that made by the state authorities.

That much for the possible wider implications of the

Supreme Court's decision. Those interested in the U.S. judges' technique of law-making may like to bear a little more about the case. It was brought as a criminal prosecution against the Southern Motor Carriers Rate Conference and North Carolina Motor Carriers Association, operating as rate bureaux and composed of common carriers in North Carolina, Georgia, Tennessee and Mississippi.

The two rate bureaux were charged in November 1978 of violation of the Sherman Act. Their defence was that their conduct was exempt from the federal antitrust laws by virtue of the act of state doctrine as defined by the Supreme Court in *Parker v Brown*. On that occasion the Sherman Act was not intended to prohibit states from imposing restraints on competition. The Parker decision has been interpreted in a number of subsequent cases as making the state action immunity only where the anti-competitive conduct was "directed" by the state.

The accused rate bureaux argued, therefore, that the rates were ultimately determined by the appropriate state agencies. The District Court found this argument without merit in a summary judgment in favour of the Government and was confirmed by the Court of Appeals for the Fifth Circuit sitting *en banc*, the majority of which held that the conduct was not entitled to Parker immunity because it was not compelled but only approved by the state.

The Supreme Court did not reverse its Parker decision but said it should be understood differently. It held that the federal antitrust laws do not forbid the states to adopt policies that permit but do not compel anti-competitive conduct by regulated private parties.

There were only two conditions expressed by the Supreme Court earlier. First, "the challenged restraint of competition must be 'clearly articulated and affirmatively expressed as state policy' and, second, 'the state must supervise actively any private anti-competitive conduct'."

When other evidence conclusively shows that a state intends to adopt a permissive policy, the absence of compulsion should not prove fatal to a claim of Parker immunity concluded the court. This opinion, written by Justice Powell on behalf of the majority, found no favour with the dissenting Justices Stevens and White. But it will probably be welcomed by foreign trading partners of the United States.

* In Southern Motor Carriers Rate Conference, Inc. et al. v United States, No. 82-1922, decided March 27 1985.

† U.S. v Baltimore and Ohio Railroad, et al., 1962-1 CCH Trade Cases 164,692 (D.D.C., April 15 1982).

‡ 37 U.S. 341 (1961).

§ California Retail Liquor Dealers Association v Midcal Aluminum Inc., 445 U.S. 97 (1980).

WEST GERMAN NUCLEAR INDUSTRY

John Davies reviews Bonn's long-term options for disposing of spent fuel

W. Germany digs into its nuclear waste pile

WEST GERMANY, which has built up a major network of nuclear power stations despite violent opposition, is pressing ahead with plans to deal with the growing volume of nuclear waste.

Nuclear experts are pursuing a long-term strategy of making the country more independent in its ability to get rid of radioactive spent nuclear fuel—both through reprocessing for future use and through permanent storage.

At present, most of West Germany's nuclear fuel reprocessing is carried out by the French at their plant at La Hague near Cherbourg, while smaller amounts have been treated in the UK and at the experimental reprocessing plant at Karlsruhe in southern Germany.

The West Germans now have decided to build their own commercial nuclear reprocessing plant at Wackersdorf, an old Bavarian mining village near the Czech border.

The plant will be built by a six-company consortium headed by KKW, other participants being Nukem and Kraftanlagen für nuclear plant and Hochtief, Dyckerhoff and Widmann, and Heitkamp on the construction side. The contract is valued at about DM 5.2bn (£1.4bn), and construction is expected to start in mid-summer.

West Germany's nuclear

reactors so far have discharged between 1,000 and 2,000 tonnes of used nuclear fuel. This year the country's 18 nuclear power stations and three experimental reactors are likely to turn out about 500 tonnes of spent nuclear fuel, and by the turn of the century the total is expected to have reached about 10,000 or 11,000 tonnes.

The Wackersdorf reprocessing plant is due to start up in 1993 and is reckoned to have capacity to treat only about 350 tonnes a year. Various options are open to handle the remainder, West German experts think.

Time is not thought to be a problem as nuclear fuel is now allowed six to seven years to cool down before reprocessing. "The 500 tonnes coming out of the reactors this year will not be available for reprocessing before about 1982," one nuclear industry expert said.

In the meantime, it can be kept at the reactors themselves, which have total storage capacity of 5,200 tonnes, equivalent to ten years' discharge. An intermediate storage centre with capacity of 1,500 tonnes has been built at Gorleben in Lower Saxony and another with similar capacity is to be built at Ahaus in North Rhine Westphalia.

The first containers of radioactive used fuel arrived at Gorleben late last year, but the

SHARE OF ELECTRICITY GENERATED BY NUCLEAR POWER

	Per cent	
	1984	1983
France	59	18
Belgium	51	46
West Germany	23	18
Britain	17	17
Netherlands	6	6
Italy	4	3
Total EEC	27	23
Source:	Association of West	
German Electricity Undertaking		
(VDEW).		

Source: Association of West German Electricity Undertaking (VDEW).

project recently suffered a setback when a court granted an injunction halting deliveries, as part of the continuing legal battle between the nuclear industry and anti-nuclear protesters.

One long-term option is simply to dispose of the waste by burying it permanently underground. Some experts claim that this would be more economical than reprocessing, although others argue that there are some uncertainties, such as procedures for guarding and monitoring the state of the containers stored underground. Investigations are currently being made into the feasibility of permanent burial of nuclear waste in the salt caverns at Gorleben. Other sites being examined, also in Lower Saxony, are the disused Konrad iron ore mine near Salzgitter and the Asse salt mine near Wolfen-

buettel. There is a consensus that it would be unwise just to dispose of used fuel. But it would also be unwise to close this option completely," one expert said. "There is general agreement that there will always be certain fuel that may not be ideal for reprocessing and recycling. So the long-term strategy is to have a mix—reprocessing in Germany and abroad, as well as disposal."

The West Germans are reluctant to predict their long-term use of the French reprocessing plant at La Hague. Although La Hague is being expanded, the French claim that they expect to need all of its capacity themselves by about the turn of the century.

The West Germans take this claim seriously but at the same time they are apt to see the French as keen bargainers, out to secure long-term contracts. In addition to existing arrangements for reprocessing in France and the UK, some West German nuclear experts point to the faint possibility of direct storage in the frozen north of Canada. "They may be interested in just drilling holes in the ice," one expert said.

Other, though less likely possibilities for permanent storage are China and the Soviet Union. China has already offered to

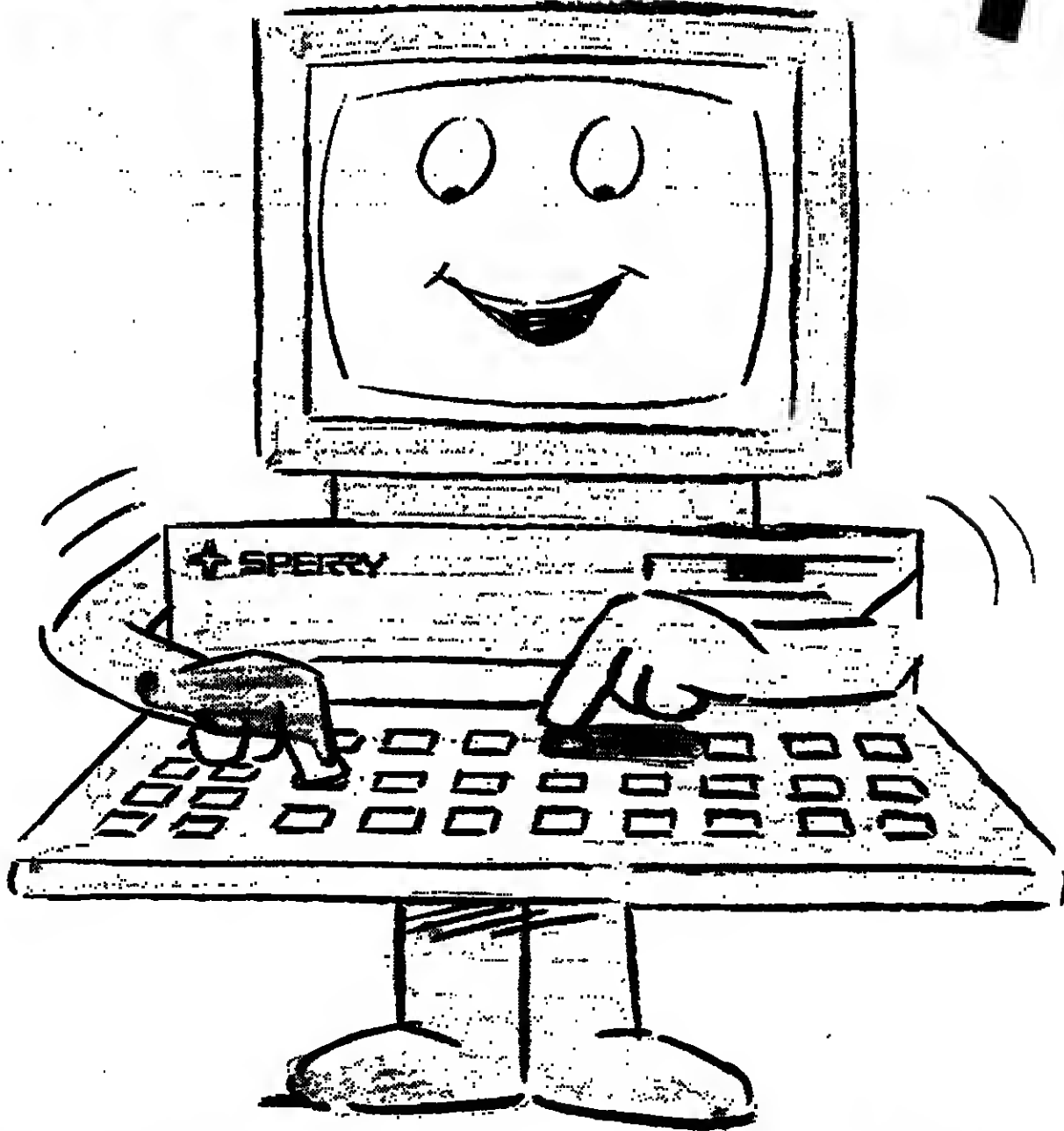
store nuclear waste for Western Europe and there are suggestions that the Chinese may go ahead with a commercial nuclear reprocessing plant. The Bonn Government, however, is considered unlikely, for political reasons, to approve involvement.

Nuclear experts point out that the Russians offered to allow Austria to send nuclear waste there. "The East Germans have done this for years and it works perfectly well," one expert said. "For them, nuclear fuel disposal is no problem at all. The Soviet Union comes to pick it up."

Another option open to West Germany is that the Wackersdorf reprocessing plant could be extended to handle a greater volume of used fuel, or a second plant could be built. This would depend greatly on the experience of the Wackersdorf project.

Although anti-nuclear protesters will fight the project with legal objections and demonstrations, construction work is expected to start shortly after Bavaria gives formal approval in the middle of this year. To allay opposition, the contractors are expected to give preference to local workers and companies, but even so the huge project is bound to raise the temperature of debate in the region by more than a few degrees.

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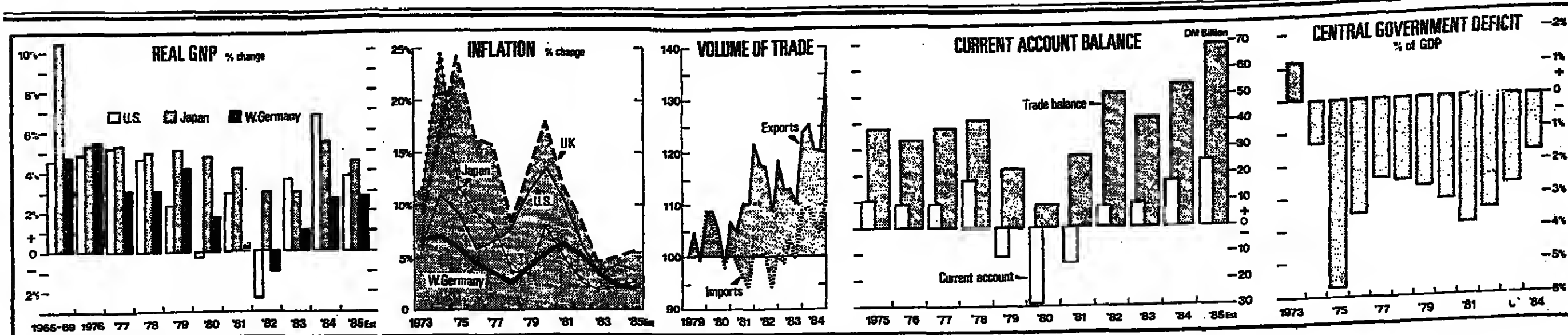
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STATISTICAL TRENDS: W: GERMANY



Export growth fuels economic recovery

THE WEST GERMAN economy seems set to grow by 2.5 to 3 per cent this year following the recovery in 1984 when output rose by 2.6 per cent. Although this compares favourably with the European average of 2.2 per cent growth in 1984, it is very modest compared with the performance of the German economy in earlier periods of recovery and is below the rate in the U.S. and in Japan.

Exports and investment have been the main contributors to the economic recovery. Real growth in exports increased by 9 per cent in 1984 and investment in plant and equipment showed sharp increases in the second half of the year.

Inflation has continued to fall. The 2.4 per cent rate in 1984 was the lowest for 15 years and was well below the European average of 6 per cent. This helped to contain the rising cost of dollar imports which make up one-third of the total imports bill.

Increased productivity has kept down increases in unit labour costs in recent years. Between the end of 1983 and the end of 1984, output per man hour increased by 11.5 per cent while wages per man hour increased by 7 per cent.

With a fall of 5 per cent in the effective exchange rate over this period, these factors, together with low inflation, have allowed Germany to maintain its competitive position.

The blight on the economic scene is the rate of unemployment at 8.6 per cent, reflecting a common European problem. The rate has doubled in four years and although below

the 12 per cent for Europe as a whole, it is now above the U.S. rate.

After the growing government deficits of the 1970s, which peaked at 5.3 per cent of GNP in 1975 and were still around 4 per cent in 1981, the ratio of central government deficit to GNP has halved in the last two years to 1.7 per cent. Government debt now represents 41 per cent of GNP compared with the average of 51 per cent for the major seven OECD countries.

Since 1980, the D-Mark has depreciated against the dollar by just over 60 per cent. The strength of the dollar has

led generally to a "sucking in" of imports to the U.S. from Europe—a significant factor in the 9 per cent increase in the volume of German exports. However, the U.S. market represents only 10 per cent of the market for German exports and the export growth reflects not only the dollar's strength but also a general increase in export markets.

The growth in exports generated a record trade surplus of DM 54bn in 1984 which is forecast to increase further in 1985.

The current account is now showing a growing surplus—DM 17.3bn in 1984, after the

COMPETITIVE POSITION				
Relative Export Prices 1970=100				
	U.S.	Japan	Germany	UK
1980	95	102	108	120
1981	101	108	99	115
1982	110	100	95	108
1983	118	100	99	105
1984	117	103	94	104

Source: OECD, INTL. Fin. Stats.

deficits of 1979-81 when the deficit sank to a low of DM 29bn.

The Commerzbank index has shown an almost steady increase since the beginning of 1983 hitting new highs in 1985.

Much of the driving force

behind this rise has come from foreign buyers whose new investment in shares rose from DM 7.9bn in 1982 to DM 19.5bn in 1984. Stock market dealings have nearly trebled over the past three years to DM 234bn of which DM 85bn represents dealings in domestic share issues.

Dealings in bonds—domestic and foreign—continue to be the major item with a turnover of DM 132bn in 1984, representing nearly 60 per cent of all transactions.

Overall there has been a substantial increase in net portfolio investment by

foreigners from DM 1bn in 1981 to DM 17bn in 1984. German investors continued to seek higher returns on interest, particularly in overseas markets, with capital exports climbing to DM 15bn in 1984.

For German investors in equities, the weakness of the D-Mark against the dollar turned a lockstep U.S. market performance in 1984 (local return 6.2 per cent) into a healthy D-Mark return of 23 per cent; the already substantial returns of 26 per cent in Japanese equities increased to 35 per cent in D-Mark terms.

COMPONENTS OF OUTPUT

% change on previous year		1974-83 averages		1984	
Private consumption	1.8	1.1			
Government consumption	2.5	0.5			
Machinery & equip inv.	1.4	2.0			
Construction inv.	-0.9	5.0			
Exports	5.9	8.0			
Imports	4.7	5.5			
GNP	1.7	2.8			

Source: Philips & Drew

PORTFOLIO INVESTMENT

	German Investment in New		Disinvest	
	Shares	Bonds	Shares	Bonds
1973	8.4	9.2	3.5	
1974	2.5	5.9	2.0	
1975	4.5	13.4	8.3	
1976	4.9	20.6	5.3	
1977	4.2	31.4	3.4	
1978	5.9	35.7	5.3	
1979	5.1	29.8	6.8	
1980	8.4	36.6	8.1	
1981	9.5	36.7	9.7	
1982	7.5	74.6	7.1	
1983	22.7	76.3	18.1	

Source: Bundesbank

Source: Bundesbank

UNEMPLOYMENT RATES

%		U.S.		Germany		France		UK	
1973	4.8	0.8	2.8	3.3					
74	6.5	1.6	2.8	3.1					
75	8.3	3.8	4.1	4.6					
76	7.8	3.7	4.4	6.0					
77	6.9	3.8	4.6	6.4					
78	6.0	3.5	5.3	6.3					
79	6.8	3.2	6.0	5.6					
80	7.0	3.0	6.4	8.8					
81	7.5	4.4	7.4	10.5					
82	8.5	6.1	8.2	12.3					
83	9.5	8.0	8.4	13.1					
84	7.4	8.5	9.8	13.2					

Source: OECD

DIRECTION OF TRADE EXPOSURE

1974		1984	
Total DM (bn)	% share	Total DM (bn)	% share
221	48	488	48
EEC	45	48	
U.S.	7.4	9.7	
Developing countries	9.4	8.1	
Other	4.5	5.7	
Centrally Planned Economies	6.9	4.8	

Source: Bundesbank

STOCK EXCHANGE TRANSACTIONS

Total		Domestic Bonds	Issues Equities
1972	40.3	10.1	22.1
73	38.2	13.5	19.0
74	29.3	11.3	13.2
75	61.1	31.1	27.6
76	61.2	27.8	24.9
77	74.5	35.5	27.5
78	87.1	37.8	34.1
79	88.3	30.0	25.7
80	85.2	40.5	27.7
81	86.8	42.0	30.8
82	128.8	74.2	35.2
83	195.8	88.9	84.1
84	234.4	110.4	84.7

Source: Bundesbank

Source: Bundesbank

NET PORTFOLIO INVESTMENT DM (bn)

German investment abroad (exports -)		Foreign investment in Germany (imports +)	
1973	598	6,599	
1974	-1,033	-1,323	
1975	-2,629	-1,571	
1976	-915	4,786	
1977	-6,407	2,303	
1978	-4,204	8,152	
1979	-2,857	5,857	
1980	-7,712	664	
1981	-6,034	1,018	
1982	-11,383	2,726	
1983	-10,381	15,576	
1984	-15,025	17,176	

Source: PIW INTL. Fin. Stats

OIL

Spot market price \$ per barrel		Imports DM (bn)	
1978	14.7	10.0	
1979	14.7	6.2	
1980	31.3	10.3	
1981	33.7	15.0	
1982	34.1	13.3	
1983	31.6	11.9	
1984	28.7	9.7	
1985	28.1	9.8	

Source: PIW INTL. Fin. Stats

CENT. GOVT. DEBT & GNP

1974		1979		1984	
U.S.	41.3	39.8	46.0		
Japan	17.9	47.6	67.7		
Germany	19.7	30.6	40.7		
France	24.7	26.3	36.6		
UK	70.3	56.0	55.3		

Source: OECD

EQUITIES

Annual Return (%) '84		Current D-Mark currency net	
Germany	11.0	11	
U.S.	6.2	21	
Japan	26.4	36	
UK	31.9	22	
France	23.2	23	

Source: Philips & Drew

Commentary by Our Economics Staff; data analysis by Financial Times Statistics Unit; charts and graphs by Financial Times Graphics Department.

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UK NEWS

Ian Hamilton Fazey on the findings of a survey of small companies

Assessing the burden of red tape on business

BUREAUCRATIC "red tape" may have cost Britain about 1.26m jobs - many of them new ones - in the five years to the end of 1984, according to a survey of the small-business sector carried out for the Government's report *Burdens on Business*.

The 71-page report, published as parliament rose for the Easter recess, sets out several options for cutting red tape. It will be studied by Lord Young's enterprise unit.

The report does not quantify the effect of red tape on job losses or job creation, but some of the data for doing so are tucked away in an appendix.

Even the most optimistic interpretation of the data suggests a net loss, in the five years studied, of about 714,000 jobs because of bureaucracy. The figures are bound to be embarrassing for the Government, prompting the question why it has only just begun seriously to tackle the issues of over-regulation and administrative burdens on business.

The survey was carried out by Research Associates, of Stone, in Staffordshire, and covered a representative sample of businesses employing between one and 200 people.

It was designed to assess attitudes towards burdens imposed by 18 main categories of regulations, such as those on value-added tax (VAT), employment protection, statutory sick pay, pay-as-you-earn (PAYE) income tax, health and safety, national insurance and company law.

The final question was what effect the Government's requirements in these areas had had on jobs. A total of 28 per cent of the businesses reported an average of 8.5 jobs each lost or not created as a result of regulations. By contrast, 8 per cent claimed that coping with

red tape had caused them to take on an average of four people each. Applying the results to the whole of British business, which the report omits to do, produces some startling figures.

For example, the Customs and Excise annual report for 1983 shows that there were 925,000 businesses registered for VAT with an annual turnover between £20,000 and £1m - that is, likely to be employing between one and 200 people.

If 28 per cent of them each lost or failed to take on 8.5 employees because of red tape, it comes to 1.56m jobs. Against that must be set the 8

per cent that took on four workers each to deal with red tape - a gain of 296,000 jobs. The net loss of jobs is 1.26m.

Even if the most harsh assumption is made - that all the jobs would be in the £21,000 companies turning over between £30,000 and £1m - the figures are still 880,000 jobs lost or not created against 186,000 gained, a net loss of 714,000.

That assumption, however, is unreasonable because it is more than likely that many of the jobs concerned would have been in smaller

companies, which would have employed more people in ones and twos.

Lord Young is considering several options to reduce red tape. Those include simplifying the means of calculating PAYE and national insurance contributions, raising the present VAT-registration threshold from £10,500 a year turnover to take more small businesses out of VAT, making sick pay easier to administer, reducing planning controls, and simplifying company law, building and fire regulations, health and safety requirements and consumer protection.

The perils of reforming child benefits

IN RECENT weeks and months the parents of about 12m children in Britain have been in danger of either losing the £8.85 a week child benefit; having it taxed; having it rolled up into the family income support benefit; or having it replaced with a tax allowance.

All these ideas have fallen by the wayside which does not yet mean that child benefit in its present form is secure, but it certainly looks safer than at any point since Mr Norman Fowler, Social Services Secretary, set up his benefit reviews 12 months ago.

A Cabinet committee is still arguing over how far the present myriad of inconsistent and often contradictory benefits should be streamlined and/or cut. But politics have largely ruled out radical reform of child benefit so far, the potential wrath of Tory backbenchers stirred up by middle-class constituents being more than the Prime Minister, in particular, was prepared to contemplate.

Child benefit is a universal benefit which means it is paid automatically for every child irrespective of the financial circumstances of the child's family. It is paid to the moth-

er unless there are special reasons for making the father the primary recipient and it therefore acts as a partial equaliser to the financial inequalities between men and women.

Child benefit has a virtual 100 per cent take-up rate; everybody cashes in their vouchers at the Post Office, the poor using the money as one of

ance contributions wipe out the lion's share of all rises.

The likelihood of reinforcing or exacerbating the poverty trap coupled with the increase in poverty in some families and what the Child Poverty Action Group has described as the "rough justice" of FIS all helped this idea for change to be killed off.

Robin Pauley reports on the problems facing the Government as it attempts to streamline the system for paying allowances affecting 12m children.

The most crucial props to the family budget and the rich using it as pin money. In 1985-86 it will be paid for 12.2m children at a cost of £4.44bn, the largest of the individual non-contributory benefits - although when short-term and long-term supplementary benefit payments are added together they come to more at £5.7bn.

Its enormous cost, coupled with the belief that many better-off families no longer need an automatic state payment towards the cost of bringing up a family, have caused the Government to look hard for ways of reform.

A strongly favoured option was to abolish it altogether and then restructure the Family Income Supplement (FIS) to give more cash where needed for children.

This would have meant that a large portion of the £4.44bn could have been saved - a key Treasury requirement in any reform being that between £2bn and £4bn must be cut from the £40bn social security budget - and poor families could have been given more cash because the FIS is means-tested. The present blanket payment would have been replaced with directly targeted cash.

At present FIS is paid if gross family income is below £30 a week for a one-child family and this threshold rises by £10 per week per child. The maximum of FIS which a one-child family can qualify for is £23 a week and this maximum increases by £2 a week for each extra child.

One of the arguments against this is that the means-tested benefits have a poor take-up rate and even if the FIS take-up rate improved through the incentives of higher payments and the loss of child benefit, nobody pretends that any means-tested benefit is ever to have 100 per cent take-up. A possibly large number of poor families might end up in worse poverty than now.

Many poor families already fall into the poverty trap under which they cannot improve their standard of living, even with quite substantial income increases, because benefit withdrawals and the incidence of income tax and National Insur-

Integrating child benefit into the taxation system has also been carefully considered, both by taxing it and by replacing it with a child tax allowance. The latter would mark a return to the pre-child benefit system when men had child tax allowances.

Straightforward taxing of the present child benefit was also considered. This suffers the reverse argument - the benefit would be paid to the woman but in most cases the man would be taxed. However, taxing benefit would broaden the tax base and make the tax system fairer for families on low incomes. If the £4.44bn were kept as the 1985-86 cost, the money collected by taxing child benefit could be used to increase it, making it even more advantageous for the poor.

However, taxing child benefit turns out to be about the same as

simply cutting it by 30 per cent. Roughly 85 per cent of families receiving child benefit pay tax and taxing the benefit would cut £2 a week off the benefit, including a large number of low-income families. One way out of that would be to gross-up child benefit by 30 per cent to begin with.

But that all leaves the Government with the same old problem: cash payments for children are about the most effective way of tackling poverty, blanket payments are so expensive as to make large increases in these payments impossible. Ways of directing the money where it is needed so larger amounts can be given have foundered.

The only moderate reform would be to pay benefit in a two-tier rate, the second additional portion going only to poorer families. But this is scarcely an improving or radical reform and the administrative complexities may not be worth the effort.

So the Prime Minister, backbenchers and some lobby groups may have jointly succeeded in ensuring that whatever happens to child benefit it will be paid for all 12m children. If that is the case the area of reform offering the largest potential gain to poor people, most of whom live in families, may have been missed.

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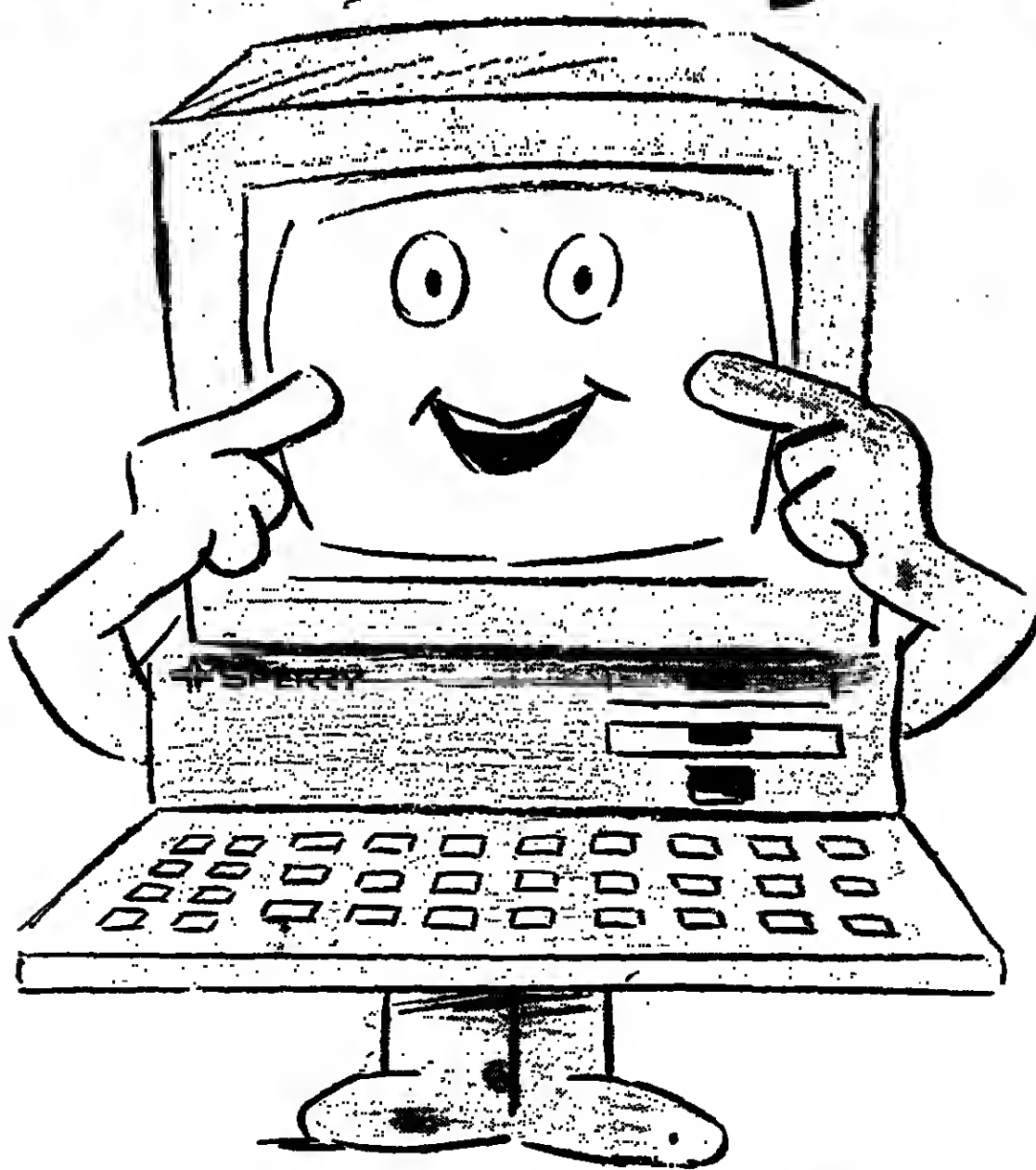
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UK NEWS

Union venture into banking returns profit

BY DAVID LASCELLES, BANKING CORRESPONDENT

UNITY TRUST, the trade union financial institution (it is not allowed to call itself a bank yet) has reason to celebrate its first birthday this month. It has confounded sceptics who doubted that a labour-backed venture could ever operate commercially, and last Friday it reported a modest but none the less tangible profit of £32,000 for its first eight months to end-1984.

After tax this covered two thirds of the £97,000 start-up costs, which means that the full expense of the launch could be extinguished this year. The biggest single outlay was £41,000 stamp duty, which apparently converted some trade unionists to the virtues of tax-cutting.

Mr David Bassett, the secretary-general of the General Municipal Boilermakers and Allied Trades Union, who is Unity Trust's president, describes it as "an up and running viable financial institution with clear objectives."

But the easiest part may be over. Backed by 36 unions representing 70 per cent of UK union membership, Unity got a large support in the shape of over £12m of union deposits which it merely parked in the money markets at a profit - a relatively effortless form of banking.

Not that the money comes free - or necessarily easily. Mr Terry Thomas, the executive from Co-op Bank who is helping to get Unity started, says that trade union treasurers have not placed their money as an act of charity: they were getting 11 per cent for short-term deposits last week which compared reasonably well with rates available elsewhere.

While the trade union movement as a whole has £500m in assets, pointing to scope for further deposit growth, Unity's task is to start finding a real use for its money.

The institution was set up to finance investment in the UK that would boost economic growth and create jobs. The intention is gradually to build up a portfolio of loans to meet that criterion while at the same time providing the institution with a commercial return.

So far it has made only a handful of loans totalling about £1m. They include a £380,000 facility for the United Kingdom Housing Association to build 12 flats for the elderly and disabled in Reading which will be sold at cost (though the UKHA itself will be paying market rates for Unity Trust's finance).

Another is a £350,000 loan for a scheme to transform a barracks at Worcester into a housing, shopping and leisure complex. A smaller loan financed the purchase of four factory units in Camcock to create jobs in a high unemployment area. There are further loan commitments totalling about £3m.

Mr Thomas stresses that Unity's growth will be sober and steady because its parentage makes it particularly vital that it establishes its credibility.

"If we're not perceived to be a stable institution, then we've had it," he said.

At least Unity does not lack capital. Its initial share issue last year was hugely oversubscribed by trade union investors; it was looking for £24m and got £4m; the surplus had to be channelled into a special class of non-voting stock.

This means that even though the founding shareholders will not get a dividend for several years, they could probably sell their shares at a profit right away, though none has.

Later this year, Mr Thomas hopes to launch a retail banking service for trade union customers.

Decline in bank staff claimed

By Brian Groom, Labour Staff

NEW TECHNOLOGY is now biting into bank staff numbers, the Banking, Insurance and Finance Union (BIFU) claimed yesterday after the release of statistics by the Committee of London Clearing Bankers (CLCB). The union's claim is hotly disputed by bank executives.

The figures show that although the total of part-time staff at Barclays, National Westminster, Midland, Lloyds, Williams and Glyn, and Coutts is growing, the number of full-time staff is 3,200 below the 1980 level at £19,100.

This comes amid news of a potentially important development at Lloyds Bank, which is considering launching a pilot scheme of self-service banking at four branches in southern England this autumn. It could be later expanded nationwide.

Using Prestel keyboards and video screens, customers in lobbies or banking halls would be able to pay bills, transfer money between accounts, cancel standing orders, seek information and order bank services without the need for staff or paper transactions.

Eventually terminals could be placed in customers' homes. The English clearing banks have been slow to follow the Bank of Scotland and the Nottingham Building Society into home banking because of consumer resistance to the cost of installing equipment. But the Lloyds scheme may be a way of familiarising customers with the system.

Although back-office staff would be redeployed on marketing services, Mr David Burton, BIFU assistant secretary, said at least 5,000 jobs could be lost if the scheme went nationwide and was developed into home banking. Lloyds said disclosure of the scheme was "a bit premature" and no final decisions had been taken.

The scheme may be launched at Salisbury, Shaftesbury, and two Southampton branches, Bitterne and High Street. The union is seeking assurances that no job losses would result.

The CLCB figures show that total staff in the English clearing banks grew by 300 to 230,300 in the year to last December. But although part-time women employees were 600 up at 23,200, full-time staff fell by 300.

Mr Terry Malloy, BIFU's Deputy General Secretary, said new technology was biting earlier than expected. Bankers argue that the stagnation of staff growth has arisen from restructuring of branch networks prompted by growing competition, and that increased impact from technology - if any - would not be felt for two or three years.

Whatever the reason for this year's stagnation, the average rate of staff growth has clearly slowed from more than 3 per cent a year in the 1970s to 1-2 per cent in the 1980s, with no prospect of a return to higher levels. Unions fear falling numbers and redundancies.

BIFU is not opposed to new technology, but wants to reach agreement giving it a say in how from the Co-op, most banks have refused to sign these technology agreements.

GEC shake-up reveals failure to change strategies quickly

Ian Rodger examines the reasons for a divisional reorganisation in a leading UK company

THE REORGANISATION of GEC's power engineering businesses last week shows that the group's much admired management rigour has not always been applied uniformly.

The group's power engineering division is made up mainly of mature manufacturing companies that have had a hard time in the past five years. Some have done well despite the difficult conditions, but others have been remarkably slow to adapt their strategies to the colder trading climate that is expected to persist indefinitely in most of these sectors.

Just to list the division's main product lines gives an idea of the difficulties. They include huge steam turbine generators for power stations, transformers and switchgear for distributing electricity from power stations to users, gas turbines for driving industrial equipment and remote power stations - mainly on oil platforms - and diesel engines for locomotives and naval and fishing boats.

The only real growth business in the division is the one called electrical projects. From a base in supplying traditional process controls to industry, it has been building up a strong position in the new automation manufacturing technologies. As it appears quite well placed in this sector, both in terms of products such as programmable logic controllers (PLCs), robots and automated guided vehicles, and systems and project management expertise.

It is one of the leading suppliers of PLCs in the UK and has recently won a first order in the North American motor industry, the stronghold of the U.S. electronics group, Allen-Bradley. The division is also managing the computer-integrated manufacturing aspect of

the Alvey project, and is developing application systems with several customers. Last December, it announced a joint venture with British Aerospace to develop generalised software for flexible manufacturing systems.

The reorganisation should provide additional strength to electrical projects by putting under its wing GEC's companies that make PLCs and electric motors and drives. Mr Clem Jansen, head of electrical projects, said that his group was the largest customer for these machines, and the integration should improve the manufacturers' response to new market trends in what is a fast evolving field.

Electrical projects are now fairly large, with turnover of about £350m a year, but still accounts for less than a quarter of the turnover in the reorganised power engineering division. Among the other sections, steam turbine generators is the largest with turnover of about £500m while gas turbines and diesels has roughly £350m in sales and the electrical distribution section some £320m.

Two of these mature businesses, steam turbines and small gas turbines, have coped very well with the challenges of the past few years, and it is no surprise that Mr Boh Davidson and Mr Kelvin Bray, the managing directors of these two, have been given increased responsibilities.

Both recognised at an early stage that the key to survival in mature products was to increase world market share. The only way to do

that was to make better products at lower cost than the competition.

The steam turbine section has spent well over £80m in the past decade on new production machinery, including high-technology laser cutting machines and sophisticated machining centres. The resulting cost savings helped it win big and profitable overseas contracts even in the early 1980s when the high value of sterling was stifling most UK exporters.

Similarly, Ruston Gas Turbines at Lincoln in eastern England has steadily improved its world market position, partly by investing about £40m in the last decade on new products and processes. In 1983, it won the MacRobert award for commercially successful engineering.

GEC's other gas turbine company, GEC Gas Turbines, was not as forward-looking as Ruston and lost ground to its competitors in the early 1980s. It was taken under Ruston's wing in 1983.

Mr Bray is taking over responsibility for GEC's five diesel engine manufacturing companies, and a similar combination of investment and rationalisation can probably be expected. Four of the five are in the UK - Paxman at Colchester, Essex, Dorman at Stafford, in the Midlands, Ruston on Merseyside and Kelvin in Glasgow. The other, Baudouin, is in France.

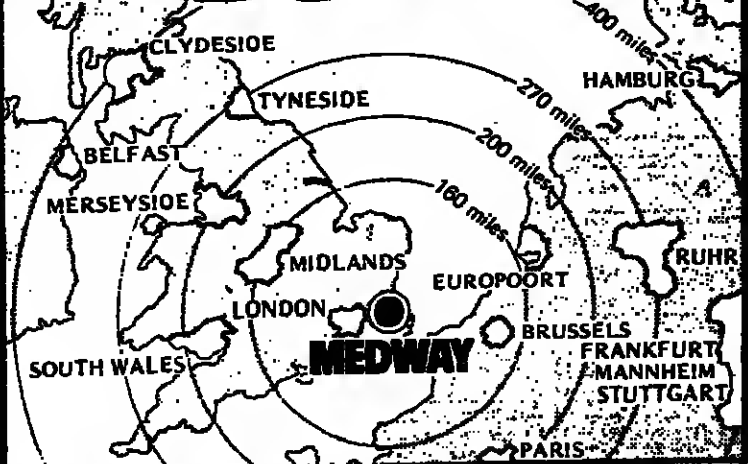
All are small, specialised producers, together making fewer than 1,500 engines a year. By contrast, Perkins, the Massey-Ferguson subsidiary, produces more than that at its Peterborough plant in a week.

Paxman, which specialises in high-performance engines for locomotives and fast patrol boats, is in the best shape, with a full order book and up-to-date technology.

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Dated this 1st day of April 1985.
By Order of the Board
M. B. M. ATKINS, Director

TECHNOLOGY

COLLABORATION LEADS TO NEW INDUSTRIAL GUIDELINES

Blueprints for safer chemical plants

BY PETER MARSH

AN UNUSUAL collaboration between chemical companies on both sides of the Atlantic has produced a set of guidelines that should improve the safety of existing chemical plants and reduce design times for new factories.

The interest of chemical companies in the programme may be increased by their wish to avoid accidents similar to the recent disaster in Bhopal, India. In that case, a malfunctioning venting system appears to have been one of the factors contributing to the tragedy.

Channels for the safe venting of gases and liquids are an essential feature of processes to turn out by chemical reactions, a huge range of products—from champagne to cement. The vents release fluids if the pressure inside a reaction vessel exceeds an optimum value.

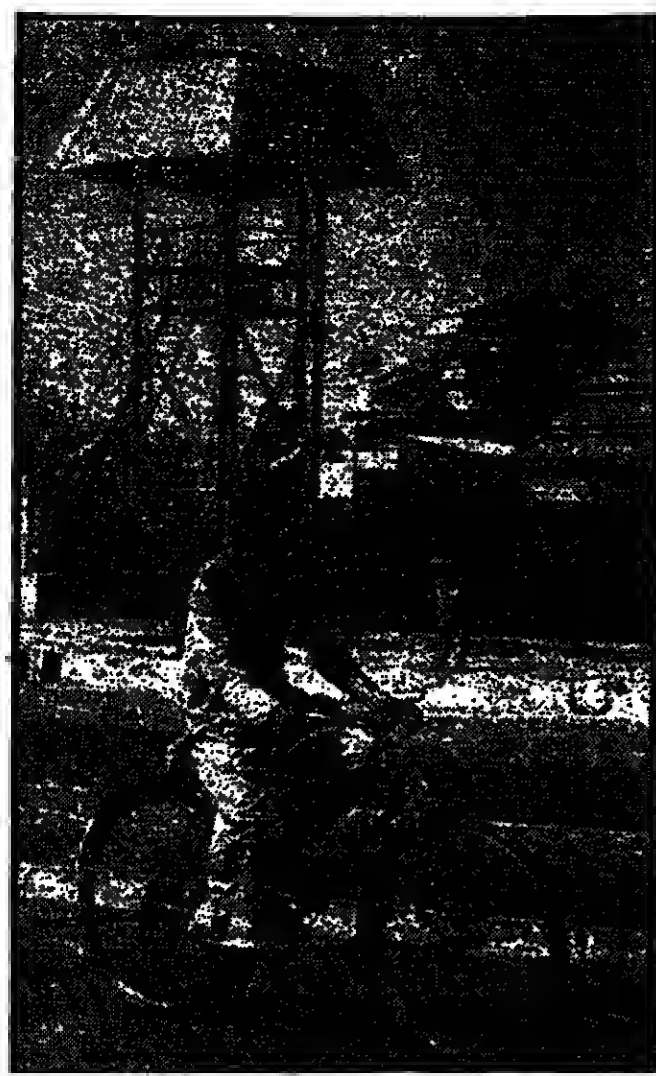
To design the correct shape of vents for "two-phase" flow—one which carries both gases and liquids—is especially difficult. The two types of fluid can interact to give a foam whose properties and behaviour are difficult to predict, as anyone who has watched a pan of milk boil over will testify.

The vents, typically a few centimetres wide, must be large enough to admit the volumes of liquids and gases that could bubble up from a reaction in an emergency. But it is against the chemical engineer's interests to make the vents too large. This not only adds to the costs of the venting system but may make its operation difficult—for instance, the large and heavy valves required for wide pipes may be more likely to stick open or shut.

A group of about 30 chemical companies started a co-operative exercise eight years ago to derive design rules for two-phase venting systems.

The \$1.6m programme, called the Design Institute for Emergency Relief Systems and conducted under the auspices of the American Institute of Chemical Engineers, is providing results with which companies can both plan new plant and check on the safety of existing factories.

Mr Harold Fisher, a Union Carbide engineer who chaired the group in charge of the programme, says that chemical companies generally have well-established design rules for vents through which liquids or gases are passed separately.



Life returns to a semblance of normality in Bhopal, India, scene of the world's worst industrial disaster last December

But for two-phase vents, the guidelines are less clear cut. Vents that have to cater for both liquids and gases may be required when, for instance, a reaction proceeds at a high temperature.

This produces gases at a high rate which may bubble up a vent pipe, propelling liquid through the opening at the same time. Such a bubbling may occur if, as a result of an accident, the pressure inside the reaction vessel suddenly drops or a cooling system breaks down.

Another type of reaction for which two-phase venting may be required involves highly viscous liquids of the consistency of washing-up fluid. Such reactions are more likely to produce foams if they go out of control.

Participants in the study included Dow, Ciba Giey, Du Pont, Eastman Kodak, Gulf Oil, Mobil, Monsanto, Phillips Petroleum, Shell, Sandoz, Hoffman La Roche and Conoco. British groups involved in the exercise were ICI, British Gas, the

Health and Safety Executive and the Insurance Technical Bureau, a research group funded by major insurance companies such as Prudential, Legal and General, Sun Alliance and Commercial Union.

These organisations underwrote the costs of the project and supplied technical data to Fauske and Associates, a company of engineering contractors in Chicago, that did much of the project work. Three sets of results followed from the exercise:

● A large body of design data that gives designers guidelines on two-phase venting systems. Such information was previously unavailable in a concise form. According to one British engineer who worked on the programme, the guidelines should cut "from days to hours" the time taken to produce the right size and shape of vent for a reaction vessel.

● A computer program intended to prescribe the type of vent for a given chemical mixture. The designer would have to feed into the program details about the type of substances in the reaction, their rate of flow through the vessel and the extremes of conditions such as temperature and pressure that the materials are likely to encounter.

The computer would also have to receive data about the size and shape of the vessel and a description of the role for the intended vent, which would channel fluids either to the atmosphere or (if the materials are poisonous) to a catchment vessel. With the program, the designer would work out whether the products of the reaction are likely to foam and the characteristics of the venting system needed to accommodate them.

● A small piece of laboratory apparatus used to test venting equipment. The \$40,000 system includes a 100 millilitre receptacle which contains the chemicals to feature in a full-scale plant. (The latter might include a reaction vessel 10,000 times bigger.) With sensors such as pressure and temperature probes, an engineer can simulate what happens in a plant when a reaction occurs. A microcomputer linked to the apparatus analyses the data to indicate the kind of vents that might be required. Fauske and Associates plans to sell commercial versions of the equipment.

DRUG DELIVERY SYSTEMS

Diabetics helped by 'artificial glands'

BY DAVID FISHLOCK

BIOTECHNOLOGY lies at the root of two ingenious new drug delivery systems, tailored to the convenience of particular groups of patients for whom current practice can be a chore.

● **Diabetics:** One system aims to replace the need for diabetics, for whom daily—and sometimes five-times-a-day—injections of insulin are a life-saver. It is effectively a miniature pancreas, implanted in the abdomen, where it releases insulin as the person requires it by a natural feedback process.

The "artificial pancreas" consists of a cluster of living, insulin-making cells taken from a healthy animal pancreas. These clusters, of some 5,000 cells—so-called islet cells—are sealed in capsules of plastic specifically chosen for its long-term tolerance by living tissues. The capsule acts like a living, semi-permeable membrane, to trigger insulin production as and when it is wanted.

But the capsule shields the "foreign" cells from the body's immune system and so prevents their rejection. Its permeability permits the insulin to leak out in response to the glucose level the cells themselves are sensing, so providing a naturally self-regulating system instead of the self-testing normally practised by a diabetic.

Behind the idea is a new company, Vivotech, set up last year at Needham Heights, Massachusetts, as a joint venture between Connaught Laboratories, the leading Canadian pharmaceutical company and its main manufacturer of insulin for the past 60-odd years, and Damon Biotech specialises in micro-encapsulation.

According to Dr Alison Thornton-Rigby, vice-president and general manager of Vivotech, another two years of safety testing, using primates, is needed before the technique will be ready for clinical testing in man. But tests in rats have already successfully demonstrated the principles.

The pancreatic cell clusters can be kept alive and healthy by a cell-culture process until they are ready to be implanted in the diabetic.

Once in place, the pores in the semi-permeable membrane are large enough to release in-

sulin, but too small to admit the antibodies which would start an immune reaction. The encapsulating plastic film is alginate-poly-llysine (PLL)—alginate, developed at the Connaught Research Institute in Ontario, and fashioned by Damon Biotech into micro-capsules about 0.5 mm in diameter.

The microcapsules are small enough to be passed by a gauge 18 or 19 hypodermic and can provide, in principle, a diabetic with a source of insulin capable of lasting a year.

● **Cancer:** The problem that faced ICI researchers was the difficulty they foresaw in persuading elderly males with cancer of the prostate gland to take their new anti-cancer drug Zoladex regularly enough to maintain a constant and optimum level of drug in the body. As soon as the drug went into development they began to seek a convenient delivery system appropriate to the typical patient.

The treatment calls for constant levels of a chemical designed to block the synthesis of androgen by the testes; in effect, to switch off the gonads. If androgen is no longer being supplied, this particular tumour usually ceases to grow. The treatment is sometimes called "chemical castration."

The scientists at ICI's pharmaceuticals division, Alderly Edge, Cheshire, came up with the idea of a biodegradable carrier which would constantly leak just enough drug to block androgen output. The carrier is impregnated with the drug—a peptide—which is liberated as the carrier itself erodes away in the moist tissues just beneath the skin.

They developed a device smaller than a grain of rice, yet containing enough drug chemical to castrate the patient for 28 days. This device—similar chemically to biodegradable sutures—can be implanted by a hypodermic developed for the purpose.

The system has been tested in about 700 patients with prostate cancer. ICI researchers say the evidence so far is that their novel delivery system works reliably and, with repeated implants, can keep the patient "chemically castrated" for many months.

Semiconductors

IBM claims 'most dense' microchip

IBM SCIENTISTS at Yorktown Heights, New York, say they have made the world's densest integrated circuits using a focussed beam of electrons to write circuit patterns directly onto the surface of silicon chips.

They claim to have shrunk circuitry into an area 16 times smaller than permitted by present day technology.

The new chips have been created by a fully-sealed half-micron process compared with conventional two micro line widths used in commercial production today. A micron is one-millionth of a metre.

IBM says its new circuits are an important step towards chips with over 100,000 logic elements and memories with 16m bits of data.

Vehicles

Suspension

DJB ENGINEERING of Peterlee has introduced a oil / nitrogen suspension system on its 35 tonne payload off-highway articulated dump trucks.

Road and load shocks are transmitted by oil from suspension cylinders and absorbed by nitrogen accumulators. A pneumatic load sensing system monitors the truck ride-height and adjusts the suspension level to compensate for the difference between loaded and unloaded conditions.

Materials

Diamond

SUMITOMO ELECTRIC Industrial of Japan claims to have developed a process for the mass production of large artificial diamonds for industrial use.

The manufactured diamonds are said to be about six millimetres in diameter, almost ten times larger than those made by conventional processes, but can be sliced into smaller units.

Diamonds produced by the new process would be suitable for use in processing precision instruments such as computer disk drives and semiconductor lasers.

11
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Security

Hackers

THE VALUE of the U.S. market for devices to prevent hackers breaking into secure computer systems, pirates copying software illegally and telephone "phreaks" making calls without paying will be worth \$741.13m this year and over \$1.5bn in 1989 according to a new report from Frost and Sullivan, the New York based market research company.

Computer security is expected to account for nearly 95 per cent of all information security revenue, the report says, adding that the minicomputer system is expected to be the most lucrative for standalone security products. The report costs \$1,650 from the company in New York or London.

Software

Lotus aid

LOTUS 1-2-3 integrated software which combined spreadsheet, graphics and database in one package found instant success but it lacked a word processor and was not too easy to use.

Its successor, Symphony, added a word processor but was even less easy to use. Now Optionware of Bloomfield, Connecticut, has developed a package that makes word processing easy with 1-2-3, or so the company claims.

It costs \$99.95 and features a word processor, instant graphics generator, calendar manager, phone directory and "to do list".

Data comms

Weather

BETTER WEATHER forecasting is the promise of a new study in which Petal, the computers and telecommunications arm of PA Consultants, is looking at the networking facilities required to support a system planned by the Meteorological Office to handle the data requirements of some 130 stations until the year 2000.

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By Daniel O'Shea

This book is based on a complete series of articles published in the Investors Chronicle under the heading "Beginners Guide to the Stockmarket". It analyses the basic principles of stock-market investment, discusses the different categories of quoted investment, examines a whole range of related essentials such as interpretation of company accounts and gives an up-to-date review of relevant tax rules.

In short, it is a complete guide to its subject. An ideal guide for people new to the stockmarket. Investing for Beginners should also prove valuable to experts who wish to refresh their ideas on basic aspects of the subject.

Published October 1984

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On March 28th, the Ttotal Board forecast profits for the year to 31st January 1986.

That's an eleven month prediction based on the results of just one month.

It assumed "there will be no material changes in international exchange rates."

But already this year the dollar has fluctuated between \$1.038 and \$1.233 to the £.

It assumed interest rates wouldn't change materially.

But already this year U.K. base rates have fluctuated between 9½ and 14%.

How many more assumptions will be overstretched?

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THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

EVEN A cursory glance at the world civil aero engine market reveals that Rolls-Royce, the famous British producer, is not exactly well placed.

It struggles along a distant third with a roughly 10 per cent share, far behind its giant U.S. rivals, General Electric and Pratt and Whitney. Competition for every order is severe, because customers know they can play off the three suppliers against each other, and Rolls, which has recorded huge losses in recent years, has suffered more than GE and Pratt.

Rolls, with its relatively low production volumes, has been at a distinct disadvantage. Its dilemma has been how to make enough profit to keep pace with its rivals in the technology race when it lacks their economies of scale.

In recent years, Rolls has tried to overcome its inherent disadvantages in a number of ways. It has always prided itself on the wit of its design engineers, and it probably gets more bang for its R and D bucks than its rivals. It has also entered into joint venture agreements with GE, Pratt and others in an attempt to pool down the competitive temperature in some market sectors.

But possibly the most important strategic move by the company has been its embrace of advanced manufacturing technology. The directors always knew that the best way to improve margins was to cut the costs of production, but on the group's low volume base that was not easy. The emergence of low-cost, computer-control technology in the mid-1970s, with its promise of efficient production even of batches of one, provided the opportunity.

However, Rolls plunged into the world of factory automation started from a rather poor base. Like most British manufacturers, the company in the mid-1970s was overmanned, and productivity was far below that of GE and Pratt.

Rolls' directors recognised that there was no point in going ahead with modern methods unless the workforce would co-operate. In what became a widely publicised operation, Frank Turner, now manufacturing director, took a few senior shop stewards on a trip to the U.S. in 1978 to study productivity levels. The resulting joint report concluded that Rolls was about 35 per cent behind its rivals and losing ground.

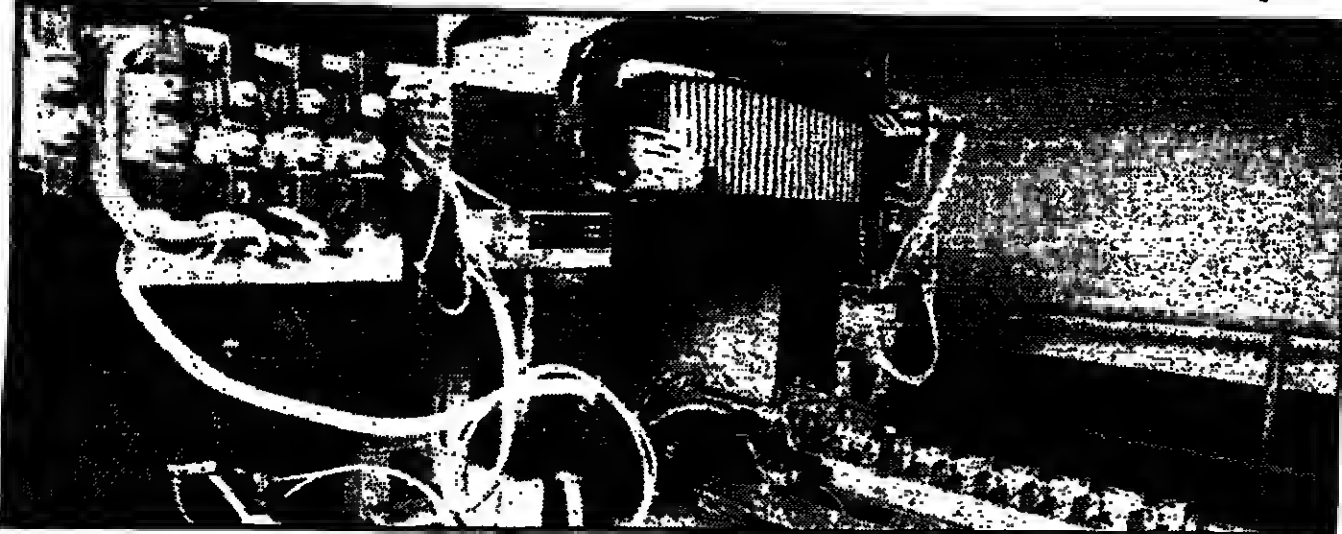
With employee co-operation, the directors soon worked out a plan of action that would focus on three areas—component design, production processes and sub-contractors—where costs could be reduced significantly.

It is now widely recognised that production costs can be

Rolls-Royce aero engines

Tuning up for a tough race

Ian Rodger on the importance of technological advances to the UK engineering group



Rolls-Royce "can claim to be among the British leaders in installing advanced manufacturing technology systems"

Hugh Routledge

significantly reduced if components are designed with a view to simplified manufacture. The most striking advance at Rolls was the decision to reduce dramatically the number of cutting tools that would be used. Previously, a designer didn't even think of cutting tools when he made a component, with the result that, in most cases, new tools had to be designed for each new component. By the late 1970s, Derby works was using 100,000 different tools. This created an enormous management task, as stocks of each tool had to be maintained and delivered to and from the proper machines.

The designers and engineers got together and worked out ways to reduce this. Today, according to Turner, Derby's tool catalogue has only 2,000 types, saving the company hundreds of thousands of pounds. The number of turning tools for one family of components has been cut from 2,000 to 100. Now, if an engineer comes up with a component design that requires a new tool, he has to get approval from the chief designer and the chief manufacturing engineer. Only three have been approved in the past year.

The second major area for improvement was in manufacturing processes. The aero engine industry has been slow to adopt advanced manufacturing

technology (AMT), and Rolls hoped it could steal a march on its rivals in this area. The emergence of AMT enables a company not only to improve its own manufacturing, but also to rethink its buy-or-make decisions. If sub-contractors also use AMT, then they can be relied on to make better components. Rolls decided that only two types of components should be kept in-house.

Those parts critical to the performance and reliability of the engines, such as compressor wheels and turbine discs. AMT could not only reduce manufacturing cost, it could also improve consistency of manufacture, thereby reducing the reject rate and after-sales service costs.

High cost, high volume components, which have the maximum gearing on company profitability, such as turbine blades. Unfortunately, by the time the company was ready to get moving in the early 1980s, sales had slumped and there was no money available for investment. The directors adopted a very severe policy of undertaking only those projects that would pay for themselves from working capital savings in one year. Nevertheless, they have made significant progress, and can now claim to be among the British leaders in installing AMT systems.

So far, three main projects have been completed, and another is due for commissioning this summer. The first was relatively modest in investment terms, £200,000, but it produced dramatic savings in the machining of engine casings. The idea was to design a common pallet for as many casings as possible so that they could be set for machining more quickly. The resulting reduction in process time enabled the company to cut inventories by 70 per cent. The project paid for itself in 10 months.

The two other projects involve machining turbine blades. The first, the so-called robot line, arose from development in grinding technology in the 1970s. First came the so-called creep feed process, in which the grinding wheel removed all the metal in one deep pass rather than several shallow passes. Then on-line measuring and computer control were added, so that corrections for wear on the grinding wheel could be made constantly. The effect was to reduce average blade grinding time by 1981 from 8½ minutes to 17 seconds.

However, that rate was too fast for a human machine operator to handle, and so a £1.9m robot handling system was installed in 1982 to serve a bank of 14 grinding machines. The system reduced the lead time for grinding 250 blades from

six days to one, and paid for itself in seven months. The other system is still more late in 1983 at a cost of £2.5m. It consists of two large grinding machines, with automated loading of both blades and grinding wheels and two integrated inspection stations at the end of the line.

If the inspection equipment reveals that the grinding is coming close to tolerance limits, the computer control automatically adjusts the grinding wheels. The result is that the reject rate is less than 1 per cent, compared with about 3 to 4 per cent on average in the company's grinding operations.

The system is flexible enough to handle blades in batches of one varying in length from 1½ inches to 10 inches and each blade takes only 3½ minutes to machine. Only two people operate the system; Rolls says it would take 20 men to achieve a similar rate of output, with less consistency, on manual machines. Rolls claims that the Hauni-Blohm system paid for itself within a year, and the company is flattered that Pratt has placed an order for one.

Rolls' most ambitious project, due for completion later this year, will automate much of the machining of discs and wheels. The key to this project is the very high value of these components—some cost as much as £10,000—and so any reduction

advanced, and was developed by Rolls in co-operation with Hauni Blohm, the West German machine tool builder. Installed of process time can be highly rewarding.

The project, called ADMS, is budgeted to cost £10.2m and, now that the company is facing better trading conditions, it has been allowed a slightly longer payback period, estimated at just under two years. ADMS comprises a computerised raw material store, a process area with computerised overhead transfer function and automated guided vehicles to link the store and machines with welding, heat treatment, laboratory and inspection areas.

Rolls officials have no doubt that the success of these and other automation projects are vital to the group's survival in the brutal civil aero-engine business. They have played a major part in reducing the Derby group's manpower by about a third in the last five years, and improving productivity. "We believe that today we operate with similar manufacturing productivity to our rivals," Turner says.

However, like everyone else that has ventured into AMT projects, Rolls engineers have had their difficulties with automation projects and they know that each one will bring new problems. As Turner puts it: "Automated machinery and advanced manufacturing systems are exceedingly complex. And the more complex they are, the more difficult they are to succeed with." His view is that companies should simplify manufacturing processes as much as possible before automating.

He is also insistent on the importance of training everyone in the organisation to be ready for automation. He said Rolls made the mistake early on of sending middle managers out for short courses.

"Nothing happened. They came back, and everyone treated them as if they had had a holiday. You have to train from the top down. I have to train myself so that I can train managers so they can train others."

Rolls still has some way to go to prove that it can stay the course in the civil aero engine business. But it is expected to report a substantial improvement in 1984 following the disastrous £18m loss in 1983, and the AMT projects are clearly helping.

They are also doing something to restore the pride of British engineering. "It is in this theatre that British industry has a chance of moving ahead," Turner says. "And we can use AMT to dispel our image of cloth caps and workers on strike."

Nationalised industries

Team briefing: not yet proven

A SHOP STEWARD at the United Counties Bus Company saw immediately what it was about and was violently hostile. "You are trying to take a lot of our power away," he said when the management announced it was introducing direct communication to employees through team briefing.

"That's absolutely right and devoutly to be wished," said John Tate, the company's general manager. He was speaking last week at a regional conference on communication in the nationalised and recently privatised industries which was organised by the Industrial Society.

A packed house from all over the public sector came to hear speakers from British Rail, London Electricity, United Counties, North Thames Gas and British Telecom on this increasingly popular topic. One notable absentee was the National Coal Board.

John Garrett, the Industrial Society's director, is a leading critic of the NCB's historical failure to communicate directly with workers rather than through the union structure. In the Board says it intends to communicate directly, but it remains to be seen how this will work out.

The conference concentrated on team briefing, the system whereby employees in groups of about 15 are briefed by their superiors for half an hour a month on things like plans and performance. Briefings happen in layers from the top to bottom of the organisation. The Industrial Society, a hands-on, no-nonsense body with union leaders, including left-wingers, on its council, likes to portray team briefing as a logical division between management and union responsibilities. It is management's job to get its message over to employees, and the union's job to represent members' views through the consultation and negotiation machinery.

In practice that can mean a controversial shift in the balance of shopfloor power. Several speakers said their organisations had turned to team briefing because they were too reliant on union structures for communication.

David Wells, acting general manager of British Telecom's London Centre Area, said BT started to attend the briefings, became interested in team

briefing during the previous year. He said that in the past, setting its message across with the POEU went along with team briefing in principle, but in detail and clearly didn't work. From BT's point of view, it had reduced resistance to change through an organisation going through a rapid transformation from a civil service to a business culture.

John Allan, director of marketing at North Thames Gas, said that in the past, communication with the workforce at many locations had been through the shop stewards. The attitude of the trade unions had been "a major barrier to change."

At United Counties, voluntary attendance by shift workers at team briefings had ranged from nil to 80 per cent. In the former case, said Tate, a shop steward stood at the door and threatened to remove union cards from anyone who went in. Now most shop stewards had because they couldn't afford not to bear the information their members were getting.

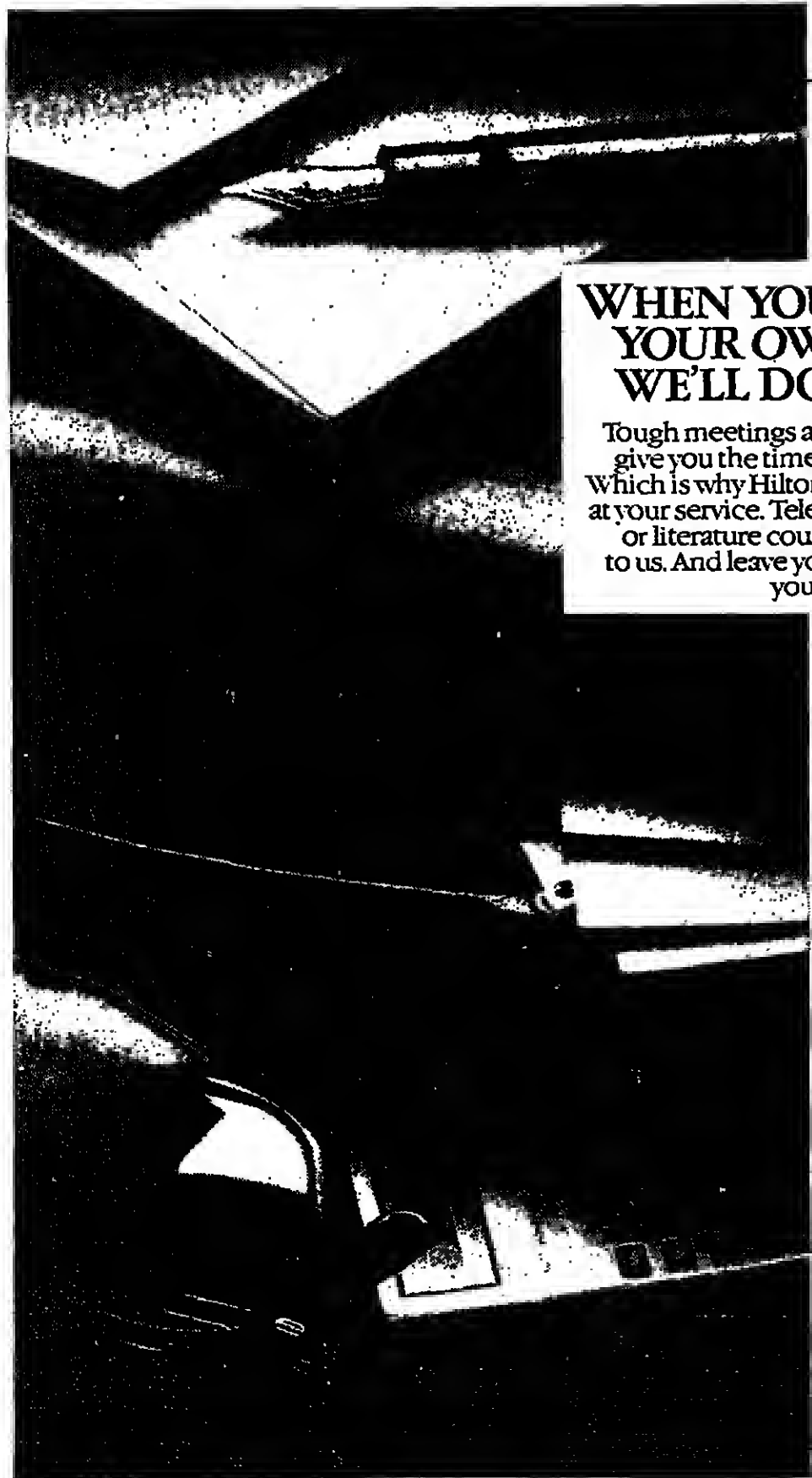
The general feeling among managers at the conference was that team briefing worked. It led to greater commitment, less resistance to change, and of importance—raised the status and authority of first-line supervisors.

It was not all plain sailing. Clive Myers, northern area divisional manager at the London Electricity Board, gave an honest account of the difficulties he had encountered in introducing team briefing.

He had not done enough himself to convince his immediate subordinates of its merits, and he had not yet introduced it for outdoor workers because area managers were not sufficiently convinced that its merits outweighed the cost of taking them off the job. Team briefing was not yet a proven quantity, he said.

Sir Richard Cave, deputy chairman of the British Railways Board, said employers had concentrated too much on video and written communications and too little on face-to-face sessions. These needed to be structured and regular. "We all realise what a big job we have got to do," he said.

Brian Groom



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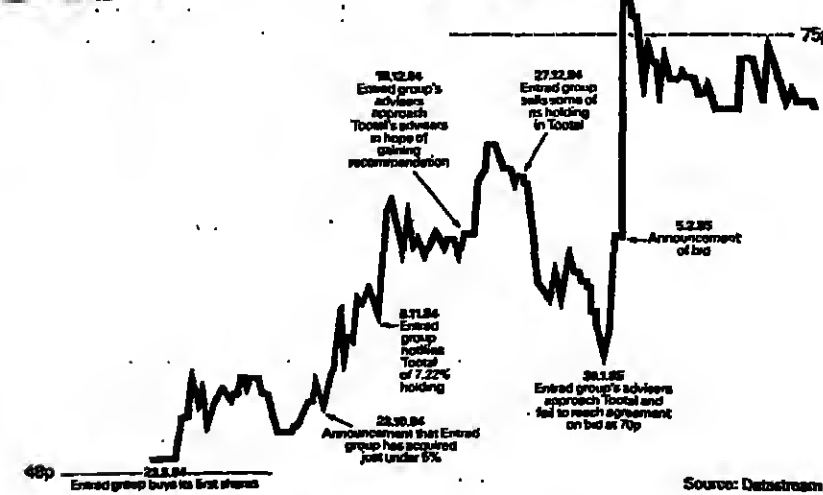
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FINANCIAL TIMES

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Monday April 15 1985

Farewell to
laissez faire

ALL OVER the world, there are tentative signs of a change in governments' thinking on economic affairs. In particular, the concept of international co-ordination of monetary, exchange rate and even fiscal policies is re-emerging gingerly from the oblivion and isolation to which it has been fashionably consigned.

Even a few months ago it would have been tempting to write off as a redundant charade the series of top-level economic meetings which began last week at the Organisation for Economic Co-operation and Development in Paris, continues at the International Monetary Fund in Washington this week, and will culminate next month with the Bonn economic summit.

Today, however, such cynicism seems at most half-justified: the meetings may still prove exercises in rhetoric, in the sense that little immediate, concrete progress may come of them; but few world leaders would claim today that the effort to co-ordinate economic management internationally was in itself redundant.

Change of heart

The most important change of heart is the one which appears to be taking place in the Reagan Administration. Friday's proposal from Mr James Baker, the new U.S. Treasury Secretary, for an international monetary conference, to be held in Washington in the summer, was on its own only a straw in the wind.

Many of the events and statements which have surrounded and preceded Mr Baker's proposal suggest that there may soon be genuine scope and desire among governments for a serious review of the way the international monetary and trading system has evolved in the 12 years since the break-up of the Bretton Woods framework. Recent speeches by Mr George Shultz, the U.S. Secretary of State, and Mr Baker himself, to say nothing of Mr Paul Volcker, the Chairman of the Federal Reserve Board, have shown a new awareness of international economic linkages that was ever evident in the arrogant dismissals of all foreign criticisms during the first term of the Reagan Administration.

The reasons for this new-found, if tentative, willingness to listen to outsiders are obvious enough. U.S. politicians

A gilt-edged
blueprint

SOMEWHAT DELAYED by the internal problems of the Stock Exchange, the Bank of England's Council in agreeing its membership proposals, the final version of the Bank of England's blueprint for the new gilt-edged market has now been published. The changes compared with the draft version released last November are technical rather than substantial.

By implication the Bank has given its blessing to the Stock Exchange's plans—though of course these still have to be ratified by the members themselves. Provided there are no upsets on that score in the June voting, the gilt-edged market will remain securely within the Stock Exchange.

The need for the gilt-edged market to be confined in this way has never been clearer: the experience of the U.S. Treasury bond market, on which the new British system is closely modelled, would suggest otherwise. However, a time when there is bound to be widespread upheaval throughout London's capital markets the Bank has understandably wished to preserve institutional continuity where possible.

Artificial separation

The same kind of motive applies to the bill market, where the Bank will continue to enforce a separation from bond trading activities.

This artificial separation has led to criticism from both sides. Prospective gilt-edged market makers have complained of the need for separate capitalisation of bill market operations, which will create organisational complications and reduce the overall return on capital through a reduction in flexibility. On the other hand, count houses will have to join the Stock Exchange if they wish to become primary dealers in the new gilt-edged market.

But the division is not necessarily imposed for all time. The Bank's paper makes it clear that the arrangements are subject to continuing review and modification in the light of experience, and the eventual merger of the bill and bond markets is a probable development once

are beginning to recognise the dangers posed to their own constituents by the excessive strength and instability of the dollar. They are becoming more aware that macroeconomic policies pursued in other countries can have a direct and important bearing on the strength of their own economy and some of them are becoming genuinely alarmed by the ferocity of the protectionist sentiments which the commitment of an economic slow-down and the overvaluation of the dollar threatens to unleash.

At any given stage of the world economic cycle, calls for international co-ordination tend to come from the laggard nations, only to be dismissed by the countries enjoying stronger economic growth. In the past few years this law of economic geopolitics has blocked international progress since the Europeans have never been able to speak with a united voice against the protectionist considerations which are pushing U.S. politicians to look at economic policy in a global framework.

Further rumblings

A slowdown in the U.S. economy—especially if it is accompanied by a major weakening in the dollar or further rumblings of the still unresolved international debt problem—will cut through some of the more extreme forms of laissez-faire rhetoric which have vitiated serious discussion of international policy co-ordination. While it would be foolish and unrealistic to seek a return to the fixed exchange rates and Keynesian demand management of the 1960s, it is becoming increasingly clear that ways bring stable non-inflationary growth in the absence of timely and appropriate government action, whether it is in co-ordinating fiscal policies, overseeing financial flows or providing the presence of international banking.

In recent years there has been no shortage of constructive ideas for improving the workings of the international economic system. Both the Bretton Woods framework and the necessary fora for a serious review of international economic policy are ready and waiting for the political will to make use of them.

"WE HAVE a choice of more Ethiopians with ever increasing frequency, or the painful and slow process of putting in place policies, institutions and incentives which will make more efficient use of Africa's resources, expand its abilities and reduce its vulnerabilities to external factors, including droughts."

With this stark alternative Mr A. W. Clausen, President of the World Bank, summarises the industrialised countries' response to what he has called "the worst economic crisis any region has faced since World War Two."

In the capitals of Western Europe and America, the consensus today is almost universal: Africa needs help desperately, but in the long run, aid could do more harm than good, unless African governments turn their backs resolutely on the 20 years of disastrously misguided policies which have brought them to their present sorry pass.

The indicators of Africa's economic mismanagement are unambiguous and appalling—not just in terms of mass starvation, drought, food production, but also in the long run, aid could do more harm than good, unless African governments turn their backs resolutely on the 20 years of disastrously misguided policies which have brought them to their present sorry pass.

Industry, too, has been reduced to chaos, despite the favouritism and protection lavished on it by post-colonial champions of modernisation and self-reliance. In more than half the African countries, manufacturing output was lower in 1980 than in 1970 and in some extreme cases, the World Bank reports that only 25 to 30 per cent of industrial capacity is actually in use.

Meanwhile, the whole continent has been sinking financially beneath a sea of foreign debt. Africa's debt service payments have doubled to 27 per cent since 1977, and its foreign debt now stands at \$4 per cent of Gross Domestic Product—a staggering debt burden in relation to GDP even than Latin America's.

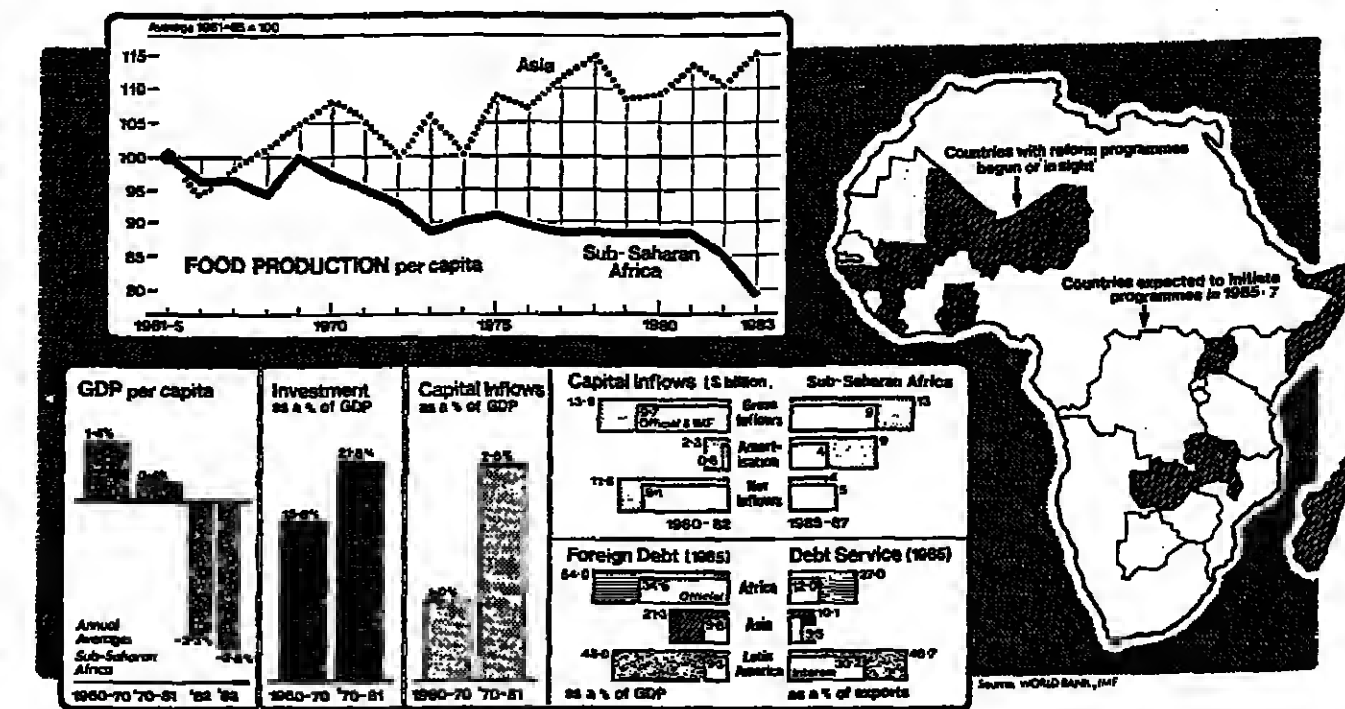
Only a handful of African countries have managed to avoid the unwelcome embrace of the International Monetary Fund in the past five years. Few of these—Cameroon, Botswana and Swaziland—can be said to have escaped the IMF's surveillance through satisfactory financial performance.

Only Nigeria has been strong enough—so far—to stand up to its creditors with a word, and in while many other countries, unable or unwilling to come to terms with the IMF, have drifted helplessly into effective default. Of those nations which did seek IMF support, most, including Tanzania, Kenya and Zambia, have seen their lending cancelled or suspended repeatedly for non-compliance with policy conditions.

Of those nations which did seek IMF support, most, including Tanzania, Kenya and Zambia, have seen their lending cancelled or suspended repeatedly for non-compliance with policy conditions. Recently Sudan, governments have been even more reluctant to accept the IMF's Choice between austerity with the IMF's backing or bankruptcy without it.

Most damning of all are the comparisons between Africa's decline in the past decade and the records of other Third World regions. In the 1960s, GNP per capita was growing at a respectable rate of about 2 per cent both in Africa and

CRISIS IN AFRICA

Wanted: a revolution in
economic thought

By Anatole Kaletsky

South Asia, for example, and food production in both regions was roughly keeping pace with population growth. Prospects for many African countries seemed bright, whereas India, Bangladesh or even China were singled out as doomed nations, unable ever to break out of the cycle of hunger, population growth and international pauperism.

Yet since 1970, most of Asia has managed to improve its lot, despite adversities of the global economic environment. Asian countries have raised their rates of economic expansion and reduced their population growth. Their food production has increased spectacularly since they were last hit by famines in the early 1970s.

What is more, Asian countries achieved these improvements despite levels of aid and investment much lower than those enjoyed by Africa. Foreign aid here has been on average eight times higher in Africa than in India and one-third higher than in Bangladesh, despite the fact that incomes per head are lower in India than in 32 out of the 39 African countries, while Bangladesh comes second only to Chad in the list of the world's poorest countries. Even more disturbingly, Africa's aid and investment levels both increased substantially between the 1960s and the 1970s, yet this did nothing to prevent the collapse of productivity and economic growth.

Clearly something in Africa had gone grievously amiss, well before the present drought and debt crisis, and in the past few years even Africans, traditionally suspicious of Western political and economic prescriptions, have joined the World Bank in raising the

alarm about their continent's disintegration.

Two years ago the UN Economic Commission for Africa warned that "the picture which emerges from the historical trends is almost a nightmare." Since then the Organisation of African Unity, the African Development Bank and several summit conferences of African leaders, have issued statements which have suggested, at least in theory, the need for something approaching a revolution in economic thought.

But putting this new consensus into practice will require far more, from Africans and their Western aid donors alike, than a theoretical conversion.

The new vision for Africa has as its gospels two World Bank reports. The first was edited in 1981 by Mr Elliot Berg, a peppy and uncompromising American professor, who immediately became one of the continent's prime hater figures as a result of his efforts. The second, published in August last year under the editorship of Mr Stanley Elkes, a mild-mannered Englishman who has just retired to Oxfordshire after a lifetime working for the Bank, gained acceptance almost immediately as the basic blueprint for Africa's future. The contrasting styles of the two reports reflect much more the tragic developments in Africa over the past three years than any fundamental change in the Bank's analysis.

There are four interconnected strands in this analysis. African governments must reverse the biases against agricultural production which they have created by maintaining overvalued exchange rates, low food prices and all kinds of subsidies for their urban popula-

tions. It is not just that agriculture has been hobbled by cheap food imports, unrealistically low administered prices and government-controlled marketing systems for produce, seeds and fertilisers, which frequently act as back-door taxes on the farmers. Less obvious is the fact that the costs of almost any form of subsidies will ultimately fall on the rural population in countries where 72 per cent of the people, on average, work on the land and where progressive tax systems, which would enable governments to recoup the costs of subsidisation from the richer urban dwellers, are either rudimentary or non-existent.

Secondly, governments must bring order into the management of public finances, particularly by rationalising investment plans and, usually, by adopting IMF programmes to deal with their foreign borrowings. In many cases, a recording of public spending priorities could require money to be diverted from investment to current spending, contrary to the normal prescriptions of fiscal prudence in the industrialised world. "When the social and physical infrastructure is collapsing all around you, it makes sense to put money into using what you've got—to pay for medicines, road maintenance or even teachers' salaries—instead of building extra hospitals, schools or highways," a Bank official points out.

Finally, and most fundamentally, they must show greater willingness to rely on market forces. Instead of administrative controls, especially in crucial areas of economic life like agricultural marketing. This is not a question of ideology, Bank officials claim,

pointing to China and Hungary.

The Reagan Administration, too, plays down the ideological significance of the market mechanism. "We're not trying to expose their whole economies to unbridled market forces," says one U.S. official. "In many cases, their fears of monopolisation and exploitation by private merchants are quite understandable—they have small, underdeveloped economies with huge obstacles to effective competition and, sometimes, racial tensions between the mass of the population and the merchant class. But we must persuade them that governments can keep their influence over key economic sectors by acting at the margins and by allowing competition between public and private sector operations, instead of trying to keep absolutely everything under their direct control."

In support of reforms like these, the World Bank wants Western governments, too, to do something. They must increase dramatically the flows of aid to those countries which undertake such "structural adjustments," and they must co-ordinate and discipline their own aid ministries to ensure that aid money is not squandered by corrupt officials, instead of contributing to favour unnecessary capital spending for example.

This is not just a question of bribing governments to pursue a policy of austerity which even in the Western world would be "an unpopular diet—and in Africa is an exceedingly dangerous one," as a senior State Department official puts it. More importantly, he says, "We must demonstrate to Africans that economic reform leads to growth." And without more aid, there can be little hope for growth, even in coun-

tries which adopt all the World Bank's prescriptions, when their first priorities must be to service their foreign debts and rehabilitate a physical infrastructure which is reverting to the Stone Age," in the words of one banker.

To provide some of the necessary money, the World Bank has raised \$1.23bn from governments outside the U.S. for a new Special Facility for Sub-Saharan Africa. The money will be spent over the next three years solely on countries which undertake specific programmes of reform and structural adjustment. Meanwhile, has launched its own Economic Policy Initiative for Africa. This will channel \$500m of new aid over the next five years to countries selected broadly in line with the Bank's criteria.

The Bank has compiled a shortlist of 12 countries which have already started reform programmes worthy of support from its Special Facility when this becomes operational in July. These include some of the nations which suffered the most disastrous falls in living standards in the 1970s, such as Ghana, Uganda, Zambia and Madagascar, as well as consistently better performers, like Malawi and Mali. A further nine countries including Zaire, Zimbabwe, Tanzania and Kenya, are listed by the Bank as "expected to initiate programmes in 1985-87." The U.S. has made its own selection of four countries—Zambia, Malawi, Mali and Rwanda—to benefit from the first year's expenditure of \$75m under the Economic Policy Initiative.

Yet, despite all this activity, it is still much too early to say that Africa has turned the corner. For the errors of the 1970s did not just arise by accident—they were reflections of powerful vested interests and political forces in both the African and the Western countries.

African governments have subsidised their urban populations and ended up oppressing their farmers not simply out of capriciousness or folly, in part least, they have been serving the economic interests which dominate their fledgling countries' political structures.

The industrialised countries, too, have had their own commercial motives for pouring their aid into inappropriate capital-intensive investment projects. More recently, they have cut aid drastically, just when it was most badly needed, in pursuit of domestic budgetary priorities. The World Bank's new facility and the U.S. EPI put together, will fill less than one third of the gap between inflows of capital to Africa in 1980-82 and the World Bank's estimates of flows which are currently planned for 1985-87.

How likely are aid donors now to override their budgetary constraints and make more money available? Will they subordinate their perceived commercial interests and offer most of their aid tied to the purchase of expensive capital equipment, even if it is conditional on tough policy reforms?

Most importantly, how long will African nations, where all political and economic power is concentrated in the hands of a few and small huraucratic elites, stick to policies which favour the unrestrained and uneducated rural masses?

Until such questions can be answered, it will be too soon to say that the African nightmare is over.

Another article on the famine in Africa appeared in the FT on April 3.

Changing tack
at the Bank

Publication of the Bank of England's "white paper" on gilts should bring into the more discerning public eye the once-chunky figure of Eddie George, 45-year-old executive director of the Bank's home finance division.

For it was he who, with his head of gilts, Ian Plenderleith, was chiefly responsible for the paper, which suggests a new structure for government securities centring on an opening up of competition. George is very much an official's official. Someone who knows him well recalls that, 10 years ago, when they first met, he hardly said a word, and what he did say wasn't worth saying. But this taciturn tendency, it emerged, concealed not only a gift for friendship, once established, but a mind that was concerned with content, not form.

Certainly, he is not afraid to speak his mind when he feels the need arise, and it may be for this reason that he has been singled out by Nigel Lawson at the Treasury as one of the two key figures for government securities centring on an opening up of competition.

If George cracks a little these days as he weighs his words on gilts, interest rates, foreign exchange and monetary policy, along with indications of the size of bar gains in which they intend to deal, and then give the firms two weeks in which some of them could withdraw gracefully on the grounds, presumably, that competition would be greater than they had imagined.

If not enough applicants do the decent thing in such circumstances the Bank might be forced to conduct its own culling operation, although the probability must be that it would err on the side of an overpopulation of market makers rather than get blood on its hands.

Men and Matters

Fading fortunes

The U.S. mergers boom has wreaked havoc with the 30-year-old Fortune 500 list of the top American companies. In 1984, as the biggest wave of takeovers flooded through America's boardrooms, the magazine's index lost 19 corporations, the largest number to disappear in its history.

It should come as no surprise that in the era of P. Boone Pickens, the Texan takeover king, by far the biggest fall-out has occurred in the oil sector, where Getty and Superior Oil have all been swallowed up by larger companies. Elsewhere, the axe fell haphazardly, lopping off, among others, the Continental Group in the forest products industry, Republic Steel, Carrington Foods and Norton Simon, once one of the great masters of takeover strategy itself.

Fortune bints at one of the reasons for this mayhem in its commentary on the performance of the "500". U.S. gross national product last year was 24 per cent up on its pre-recession level of 1981. Sales of the "500" companies, however, declined by about 1 per cent over the same period, while profits rose by a mere 2.6 per cent. This is not the sort of record which leaves stockholders particularly happy—a point which Wall Street's new breed of predators has tirelessly driven home.

Latest news from the takeover front is that the attacks on the old wealth of corporate America are continuing. Since the new Fortune list was compiled, Phillips Petroleum (number 17 last year) has had a narrow escape, while Crown Zellerbach (129), the forest



"If you can guess this week's price change you win a Sinclair C5."

products group, has come under siege from Britain's James Goldcorp, and tyre group, Uniroyal (164), is being pursued by Carl Icahn, one of the profiteers from the Phillips affair.

Inflation rules

The political parties in Bolivia are rushing to name their candidates for the general elections to be held in June.

One of the first bats in the ring is that of a powerful "moderate," Carlos Serrate Reich, former Bolivian ambassador to Moscow. He has been named presidential candidate by the MNR-Vanguardia, one of the factions of the political movement which pushed through a social revolution in South America's poorest nation in 1952.

The bespectacled, bustling Reich runs a newspaper called Hoy in the commercial capital, La Paz. According to the paper's calculations, the price of flour rose by 50,500 per cent between November 1982 and last February, cooking oil went up in the same period by 112,458 per cent, and a visit to the doctor cost 157,745 per cent more.

In such Weimar Republic conditions, with exports of everything but narcotics falling, and striking miners flinging about the odd stick of gelignite as they parade through La Paz, it is a miracle that anyone wants to rule Bolivia.

Still, Reich can take a little comfort from another statistic of inflation quoted by his paper. The cost of a kilo of beef—now 4,500,000 pesos a kilogram—has risen by under 50,000 per cent. And the West fears double-figure inflation.

Red sky

Peter Miller, the chairman of Lloyd's, who begins a tour of China next week, has opted to fly the flag for Britain. He will tour the People's Republic in a leased masterpiece of British aviation technology.

Unfortunately, the aircraft in question will not be of recent construction. Indeed, it was sold to the Chinese Airforce a decade ago. It is a Trident—one of those workhorses of the air which are now being phased out here in deference to age and environmental restrictions. Last month, Lord Young and a UK trade mission wended their way round China by the civil airline, CAAC. The Prime Minister—no stranger to gaffes in the Far East—had wanted an all-British Aerospace BAe 146 airliner to be used, but British Aerospace had none to lend, and the Defence Ministry balked at the cost: £200,000.

Ab well. In another 10 years or so, we can always sell them second-hand.

Observer

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Economic Viewpoint

More homes to let: a test of political courage

By Samuel Brittan

THE ACID TEST of the Thatcher Government's sincerity in pursuing supply-side policies to help people find their own jobs will be with us very shortly. It arises on an issue where, for once, free market economics coincides with the Government's own policy instincts, where the arguments for action are overwhelming, and the number of potential sufferers extremely small, if the reform is carried out competently.

The key is to be found in a motion on rent controls moved by Peter Hordern, a Conservative MP, on March 8 and supported in a personal capacity by Peter Lilley, the Chancellor's Parliamentary Private Secretary. Mr Hordern made clear that he expected protection for existing tenants to continue and that he had in mind only to decontrol private tenancies, a road along which Germany and France have already travelled. It is with this possibility in mind that Ministers are engaged in a review of the private rented sector.

The withering of the private rented sector is second only to over-rigid labour markets as a cause of high unemployment. A young person moving from a high unemployment region like Liverpool to a more prosperous area may well not be able to afford to buy a new house, or may rightly hesitate to tie himself down straight away. He will have almost no chance of a council house in view of the long waiting lists.

The most natural form of accommodation for him would be private sector renting. Yet, because of rent controls private landlords do not have any incentive to provide such accommodation. On the contrary, the landlord has every inducement to let the property for owner occupation as soon as it becomes vacant. The stock of private rented dwellings is less than 2m and is shrinking by at least 70,000 a year.

Private sector lets have fallen from about 90 per cent of all accommodation in 1915, when rent control was imposed, to 45 per cent in 1950 and less than 10 per cent today. (In the U.S. it still sits at 30 per cent, in Switzerland over 60 per cent.)

Because rents are so far below free market levels, other wastes proliferate. One example is under-occupation. When a children grow up, parents find it does not pay to leave for smaller accommodation. Landlords, on the other hand, are tempted to leave rented properties in disrepair and disrepair.

Because there are now so few new lets more and more people now depend on bed and breakfast accommodation, or are placed in hostels of varying kinds, or simply sleep rough. All these abuses have increased manifold since the Labour Government atomically extended control to furnished accommodation in 1974.

A graphic illustration of the effects of rent control was given in a recent letter to the Standard newspaper by a reader who would have been prepared to spend £5,000 to convert some rooms into a self-contained flat if he could have charged £30 per week. The interested tenants were a couple forced to live in bed and breakfast accommodation costing them £40 a week each. So they too would have gained. But as the landlord could not expect to recover more than £13 a week under a regulated "fair rent," the whole project had to be abandoned.

Some Government faint-heartedness is, of course, diffused by the fact that the Conservatives will be in power for a year before the Labour Government would re-impose controls. It is best to concede that the main benefits would come after an election—although it would be wise to have any new Act in operation for a year before, just to disprove the prophets of horror.

It would also help if the SDP could avoid being as conservative as Labour and, however many disapproving noises it made, avoided outright repeal of the 1957 Act. The big difference, however, is that the Conservatives will be in power for a year before the Labour Government would re-impose controls. It is best to concede that the main benefits would come after an election—although it would be wise to have any new Act in operation for a year before, just to disprove the prophets of horror.

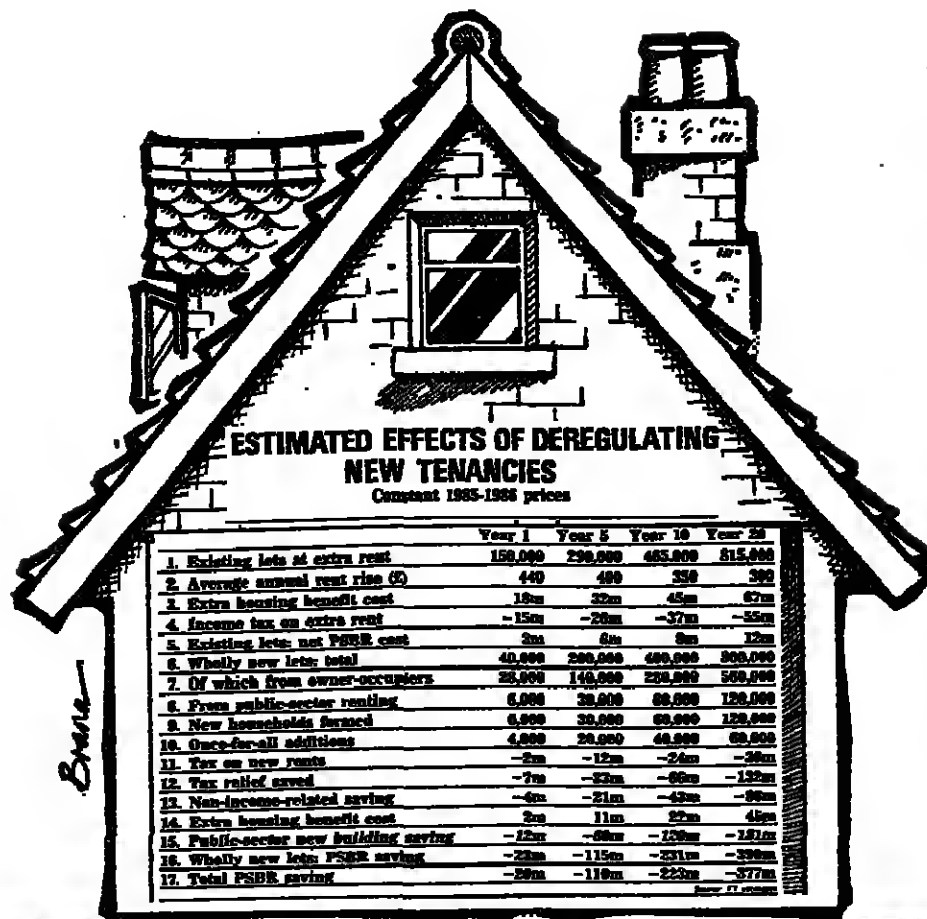
The accompanying table is an entirely unofficial attempt to estimate some of the principal consequences of deregulating new tenancies.

also be accompanied by measures to give existing tenants more protection against harassment.

Deregulated new tenants would be protected from being thrown out on the street in the event of a failure to agree a new review by the Protection from Eviction Act of 1977. An additional safeguard might be for new tenancies to be fixed for agreed periods between landlord and tenants, instead of the indefinite arrangements customary in this sector.

Another immobilist argument is that landlords would hesitate to let for fear that a Labour Government would re-impose controls. It is best to concede that the main benefits would come after an election—although it would be wise to have any new Act in operation for a year before, just to disprove the prophets of horror.

The accompanying table is an entirely unofficial attempt to estimate some of the principal consequences of deregulating new tenancies.



The starting point is the 1981 Labour Force survey showing some 500,000 private sector lets expiring each year. This figure might be reduced because of "loophole lets" (eg, to companies) or lets on which housing benefit is not claimed. The number of new tenancies at higher rent on which benefit would be paid has, therefore, been reduced to 150,000. But not a great deal hangs on this reduction, as the benefit cost would be substantially offset by income and corporation tax on the extra rents. After 20 years about half the existing controlled tenancies might be eliminated, and after 50 years the whole lot.

Officially registered rents in London averaged in 1984 just over £1,100 per annum for unfurnished dwellings and nearly £1,600 for furnished. Outside London they were £775 and £1,150 respectively. The initial rise on new tenancies could range from 50 to 100 per cent in London to near zero in some areas where market forces would not allow an increase. An average increase of £440 has been written in for the whole country. This figure (measured at constant prices) will clearly decline as supply increases.

The more interesting lower half of the table makes an estimate of the new lets, which greater freedom would stimulate. The total rented stock is assumed conservatively to rise

by about 2 per cent per annum until it has increased by one-half. This gives 400,000 new lets per annum of which 70 per cent might be in place of owner occupation, 15 per cent in place of council tenancies, and 15 per cent arising from newly stimulated household formations. Another 4,000 new lets per annum might come from previously vacant properties, until 50,000 of these were absorbed.

The following lines show resulting Exchequer gains: from taxes on new rents, savings in mortgage interest relief and from savings in, for instance, improvement grants, which are less in the privately rented sector. The final result is a modest PSBR saving of just over £20m in the first year, rising to over £200m per annum in the tenth year and to nearly £400m in the 20th. The real present value of the savings discounted over 50 years may be between £5bn and £9bn (at 2 1/2 to 3 per cent real discount rates).

Whitehall's estimates probably differ from the table by showing a small PSBR cost in the early years. More pessimistic assumptions might be made, for instance, on initial rent increases, and on income tax gains. There might be political obstacles to reduced council house building, or to the changes in housing benefit recommended by the recent inquiry.

On the other hand, the table is itself very cautious on many key assumptions, above all the number of new lets once it is clear that deregulation is here to stay for some while.

Even on the most pessimistic assumptions, the initial PSBR cost in the early years could hardly be more than £50m to £100m per annum. This is 1 per cent of the PSBR, but of the estimated error in forecasting the PSBR. It would be recovered in increased tax revenues if the national income rose once-for-all by 0.03 per cent as a result of greater mobility and more jobs.

But even without counting on any GDP gain whatever, almost no adjustments could prevent the PSBR effect becoming favourable after a very few years and having a very large present value. Anyone who cites the PSBR effects as a reason for not deregulating new tenancies is thus using it as a cover for lack of political nerve.

A proper housing policy would not stop at private tenancies, but re-examine the future of council houses and of mortgage interest relief. The latter concession spills over into consumer credit and raises interest rates generally. But only the Grand Inquisitor would use the lack of progress on these fronts to hold up a measure which could bring unemployed people to places where jobs are to be found.

Lombard

Let's have less information

By Michael Prowse

WE ARE extraordinarily dominated by economic statistics. Financial markets wait breathless for monthly money supply figures—data the Bank of England began to collect only in 1963. Businessmen's confidence is constantly buffeted by endlessly-revised figures for investment, corporate profits and the balance of payments. Everybody has learned to fret over the inflation, earnings and unemployment statistics. Gross domestic product, a flawed measure even of economic activity, is held in awe and regarded by many as a measure of the nation's overall well-being.

Does this plethora of statistics do anything to improve the economy's efficiency? Suppose an indefinite strike at the Central Statistical Office and other data collection units allowed Mr Nigel Lawson, the Chancellor, honestly to disown all knowledge of inflation and the money supply and Mr Tom King at Employment to confess to total ignorance of national trends in earnings and unemployment. Would the economy suffer badly? The answer would not be straightforward: since the old statistics would no longer exist, they could hardly be used to gauge the impact of their disappearance. Less data, however, would not necessarily entail a less healthy economy.

Most economists would probably argue that such an "information strike" would damage more than their own profession. Information, they might claim, is a scarce but valuable commodity and the more that is available the better for everybody. Such an off-the-cuff response should be treated with caution. Official data gathering is a modern phenomenon. Economic statistics were virtually nonexistent in the late 19th century yet British entrepreneurs enjoyed their heyday.

Economic statistics may be valuable even if capitalist economies have performed well in their absence but why is macroeconomic data gathering almost invariably a public-sector monopoly? If a market economy needs information of whatever sort, private companies will surely have an incentive to collect and distribute it for

profit. Much of the data about economies accumulated by official agencies may be irrelevant to business and commerce; some may even be inimical to their interests.

Could some of the instability of modern economies reflect a surplus of information in the wrong places? Decisions may be distorted as much by excessive as by inadequate knowledge. Think how easily companies might achieve sensible pay awards if average earnings data were not such a preoccupation: the focus could shift from "going rate" considerations to more relevant factors such as local competitive pressures. Think how financial markets might calm down if they were offered less officially-generated macro information of dubious relevance, whether about money supply, inflation or the balance of payments.

If the Government ceased to publish economic statistics, the information which remained would presumably be that which served a genuine purpose in a market economy. The exchange rate, interest rates and stock market valuations, for example, would survive because these prices, determined by thousands of participants in real markets, are useful. Companies would still publish accounts because shareholders and others need the information, but spurious official data on aggregate corporate profits would vanish. And although money supply data would not be collected, the Bank of England could still keep track and control of its own liabilities—cash in circulation and the reserves of commercial banks—and thus regulate the monetary base.

The modern obsession with macroeconomic statistics seems to reflect an unhealthy and pervasive curiosity about other people's affairs. Less official data would make fewer comparisons—for example about pay—feasible, and this could only be beneficial. Why not let the market decide what information is needed? Private firms should not be prevented from inventing and then monitoring artificial macroeconomic averages and aggregates, but taxpayers should not be expected to finance the Government's pursuit of potentially damaging

Broadening the tax base

From the Chief Executive, Abbey National Building Society

Sir—The idea of Dick Taverne's (April 10) to exempt all savings from taxation, and instead to tax their realisation as income, is admirable and simple. One almost hopes readers will find a multitude of defects in order to ensure a fuller airing.

He is too discreet to mention withdrawals from National Savings. But scarcely a need, the Government will have thought of it. Another exemption?

Peter G. Birch, Abbey House, Baker Street, NW1.

The Chancellor's intention?

From Mr J. MacKenzie, Sir—With the forthcoming earnings related "banding" of contributions we appear to have invented an anomaly.

On personal income tax one is taxed on a cumulative basis according to the respective bands. National Insurance contributions will be levied by a differential method—a flat rate on earnings irrespective of the "band". For example on person A, earning £130 per week, both employer and employee will pay 9 per cent that is £11.50. On person B, earning £129.99, the rate is 7 per cent that is £9.09. There is no encouragement for any marginal increase in earnings close to the "break point". Indeed one can foresee peculiar manoeuvres, on the part of employers and employees, designed to avoid paying higher rates on a regular basis.

If we pursue this to its logical conclusion using the DHSS scale with the same earnings of "A", £130, the contributions are £11.50 each. Using the "banding method" that is 5 per cent on £35.50 to £55 per week, £2.75, 7 per cent on £55 to £90, £2.45 and 9 per cent on £90 to £130, £3.60, the total is £5.80 a saving of 25 per cent.

This cannot be what Nigel Lawson really means? Ian P. C. MacKenzie, Woodrook, Barrhill Road, Govan, Scotland.

The nature of an audit

From Mr J. Smurthwaite Sir—For too long the accountability profession has hidden its collective head in the sand. Any business has to satisfy a genuine commercial need or die. The accountability profession is no different to any other business in this respect, but seems most reluctant to accept it. It is not precise accountants still seem to regard their audit appointments as some form of beneficence granted them by the Companies Act 1948 and are surprised to

Letters to the Editor

find that even after having conducted the rites of their office in prescribed form, some of their parishioners are unimpressed enough to complain.

There is a real economic need for someone to attach a seal of approval to financial statements and thus to add credibility to them. For this service a proper fee should be paid. The accountant is that those who have been misled by the credibility thus accorded to the statements should be recompensed (properly and in a dignified manner). This is little different to product liability insurance and in commercial terms it would be sensible to view it as such.

The whole nature of an audit should perhaps be re-thought by the accountancy profession to more nearly accord with the commercial demands now being made. Instead of an audit being the work necessary before an auditor can form an opinion (expressed in words too arcane for general understanding), perhaps it should become the work done by an auditor to reduce his personal risks to an acceptable level, and thus make a fair profit from the fee charged.

John Smurthwaite, Gymbrook, Marlow Common, Bucks.

Practical accounting

From Mr D. Goch Sir—Reading the letter from the chairman of the Accounting Standards Committee (April 2), one cannot help but express a sneaking admiration for the persistence with which he and his committee seek to attain the unattainable.

Few shareholders are sufficiently familiar with the finer points of accounting presentation to do more than comprehend the salient points in the balance sheet and profit and loss account—let alone to understand the Byzantine mechanics of current cost accounting. Gearing adjustments and monetary working capital adjustments are strictly for the birds in the context of financial communications to shareholders. As for managers, they take account of inflation in other ways when they are making business decisions and have little need to listen to the siren-calls from academia.

One of the most practical ways in which the compilers of published accounts can help shareholders (and, I suspect,

many financial analysts) is to provide supplementary five-year sales turnover figures which have been indexed to the RPI so as to give a broad indication of ex-inflation trends. Perhaps that is as far as the ASC should go for the time being.

Desmond Goch, 4 Paddock Wood, Harpenden, Herts.

Airline travel

From Mr H. Pritchett Sir—I am at present in Indonesia where I have just read the survey on regional airports (March 25) and I must contest some of the statements, which bias the argument towards the south east and play down the role of Manchester as an international airport.

I am well qualified to comment having clocked up more than 1,250 miles in the past 20 years and visited more than 120 airports around the world. I can assure you that Manchester compares very favourably with many of the major airports abroad and it is infinitely better than some.

Back to the survey. The chart on page 11 was prepared by British Airports Authority which has no financial interest in Manchester and is obviously trying hard to make out a case for further expenditure in the south east.

Adding up the number of passengers handled per year by all the regional airports (your figures) gives a total of over 18m (6m contributed by Manchester alone). The BAA survey says "... only a small proportion—8.2m—of the total of 45.4m flow into London from the regions. What is omitted to state is that this means that 12m from the regions don't fly into London. An average of the column of percentages (same chart) is about 30, which checks out the arithmetic.

If Manchester handles 6m passengers per year the statement that Aberdeen is Britain's third biggest airport, after Heathrow and Gatwick, and that Jersey with 1.5m is number 4, is just not true. It is another attempt to mislead.

It is also mischievous to assert that any attempt to divert international traffic away from London to the regions would result in business being lost for ever in Continental airports. Even if Paris is as near to London as Man-

chester there is still the English Channel to be crossed. If you are thinking of the 10 per cent (from the chart) who use Heathrow as a transfer point I doubt if Stansted would be an acceptable alternative.

The chart also shows that only 2.3 out of every 100 passengers arriving in London want to go to the north west. This may very well be true but these are probably first time travellers who are unaware of alternative routes.

No seasoned traveller would route via London to Manchester from choice. Harry Patchett, 26 Hartley Road, Altrincham, Cheshire.

Premium 'phone services

From the General Manager, Supercall Sir—Mr Taylor (April 10) on Citycall makes a number of errors.

Citycall is one of a number of premium telephone services provided by Supercall, a new business in British Telecom's Enterprise. It is a value-added service, in that it provides constantly updated financial information in telephone calls. Mr Taylor asks where our eight-digit number, 0065 0066, and our network facilities come from. We ordered them from British Telecom London many months in advance of our launch. The facilities are available to all service providers, whether from British Telecom or elsewhere.

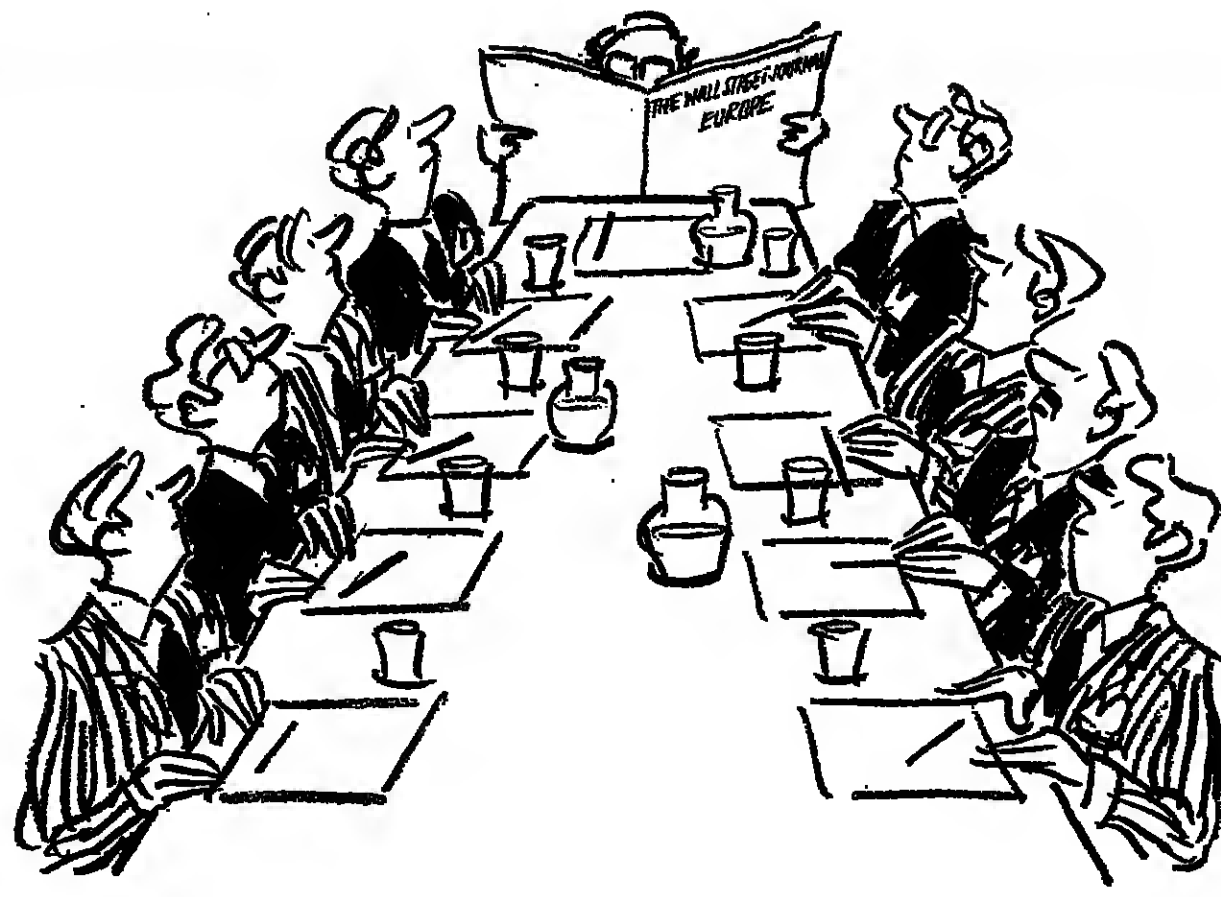
Mr Taylor is quite wrong to say that the service is provided by British Telecom. Supercall operates as an arm's length profit centre, and is a customer of British Telecom London. Our services are currently confined to London, but we aim to expand our coverage to other areas.

Kieran Lewis, 1-9, Downham Road, NI.

Into the unknown

From the President and Chairman, Japan Association Sir—You quote (April 10) Derek Kingsbury of Fairley Holdings as saying: "It is sad to see people limited by their own very excellent experience and knowledge, trapped as to speak into retreating back into the market they know. And this problem is a bit of a national disease." Coincidentally, Mr Nakasone appeals to the Japanese people to buy more foreign products.

We hope that British exporters who have not yet tried their hand at the Japanese market will be encouraged to do so now. The rewards could be great and there is a wealth of good advice available (Sir) Michael Wilford, Graham McCallum, Regis House, 6th Floor, 43-45, King William Street, EC4.



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Terry Byland
on Wall Street

Tremors fail to unsettle

THE LATEST tremors in the U.S. financial markets after the collapse of another of the smaller federal bond trading firms have done little to shake Wall Street's confidence in the financial sector. That contrasts with the mood in European and other world financial centres, where recurrent hints of "more trouble in the U.S. financial system" have helped unsettle the U.S. dollar.

To take Wall Street's most obvious mood indicator, stocks of the main banks have been moving strongly into the quarterly reporting season. Last week saw J.P. Morgan leading the pack as the leading banks began to report the expected increases in first-quarter earnings.

Nor is the brokerage community about to change its stance on bank stocks. Mr. Ron Mandel, who watches the sector for Paine Webber, spoke for the street when he told a recent seminar: "We like the 1985 outlook for money centre bank stocks." Even the upsets at some Texan banks have been brushed aside by investors in the leading banking names.

The latest difficulties among bond trading firms have been smaller scale than those of Drysdale Securities, or of the problem loans that surfaced at Continental Illinois - or even of the vast sums still at risk in Latin America.

Even better for stock prices has been the noticeable easing of Wall Street tensions over the Latin American debts. Time of course will tell, but the hope now is that the Latin debts have been taken in hand by all parties concerned.

"We are probably halfway through a five-year workout," says Mr. Mandel. "In the remaining 2½ years or so, the ups and downs will continue."

Meanwhile, the money-centre stocks continue to trade cheaply against the industrial market. In part, that represents the scope for recovery from the middle of last summer when the sector fell almost out of sight. Now that the dollar is helping domestic and international creditors of the U.S. banks, a fresh dip in their funding costs would benefit earnings quickly. The next six months will show which is the more justified - Wall Street's confidence or Europe's doubts.

Bevill's losses are expected to be only about \$200m and the firm was clearly numbered among the 100 or so small, second-line traders in federal bonds. The losses will be borne by the smaller savings and loan corporations, money financial traders, and the lesser known municipal pension schemes. The big banks were probably unscathed.

Wall Street has welcomed the comments of Mr. Preston Martin, vice-chairman at the Federal Reserve, that the recent upsets have vindicated the soundness of the U.S. financial system. The difficulties raised by the Bevill and ESM failures are serious, but they concern the regulation of financial markets rather than banking profits and losses.

In doing so, Wall Street may be overlooking too much. The losses at ESM, together with the stock delivered to the Ohio thrift customers, might yet justify European worries over the system - especially if there are further failures. Serious losses in the federal bond market would soon find their way back to banking balance sheets and stock prices.

Wall Street brokers have strong arguments for continuing to recommend bank stocks to clients. The stocks still rate cheaply, despite their advance at the end of last year.

Last week's sudden plunge in short-term market rates opens up the chances of further gains for the banks, which profited significantly when rates fell in December and they were able to delay reducing their own primes. Brokerage analysts continue to favour the money-centre banks rather than the regionals, which have been upset by the problems at some of the Texan banks. That represents a clear contrast with the views held 12 months ago. Gains of 10 to 15 per cent in first-quarter earnings are predicted for the leaders and borne out by the results disclosed to date. Second and third-quarter earnings should also look good.

UK MAINTAINS CAUTIOUS APPROACH TO INTEREST-RATE CUTS

Markets keep close watch on £

BY PHILIP STEPHENS IN LONDON

THE UK Government and Britain's leading commercial banks will be watching sterling's performance on foreign exchange markets to decide whether there is scope for a further small cut in interest rates.

After Friday's ½-point cut in base rates by Barclays and Midland banks, the Bank of England indicated firmly that it was not prepared to see a rapid fall in the general level of borrowing costs.

In addition, markets will be watching closely this week to see how the dollar reacts to a series of U.S. economic indicators, including revised GNP figures, which are due to be published this week.

The pound's strong gains against both a weakening dollar and against European currencies, however, have rekindled optimism in financial markets that if present trends continue there could be room for another modest reduction.

The pound has risen against all leading currencies but that is partly because high UK interest rates have attracted a relatively higher proportion of the funds moving out of dollar into sterling than, for example, into D-Marks.

National Westminster and Lloyds Banks, whose 13 per cent base rates are now above the 12½ per cent charged by Barclays and Midland, indicated that they would be reviewing the situation daily.

Both banks are thought to be reluctant to move their rates by only a ¼ percentage point, raising speculation in the City of London that if the pound continues to rise they might "leapfrog" to 13½ per cent.

The borrowing charges of the major banks have in the past been out of alignment for several weeks at a time, however, suggesting that neither will feel under immediate pressure to make a firm decision.

Despite sterling's remarkable turnaround since last month - it is now at its highest level since August 1984 - the Government is maintaining an extremely cautious approach to base rate cuts.

Its reaction to market developments over the last few weeks indicates that while it will occasionally accede to pressure for lower rates it will resist too rapid a fall.

Part of the explanation is probably tactical. Last year the Treasury and the Bank acquired a reputation in financial markets for pushing interest rates down in every opportunity, which undermined confidence in their anti-inflation strategy.

Now the authorities want to ensure that if rates do come down then it is seen clearly as a response to developments in the money markets rather than as Government-inspired.

The Bank is also sensitive to any possible change of sentiment on the foreign exchange markets. If interest rates fall rapidly - after all, a key factor underpinning sterling at present is the high level of Britain's rates relative to those in the rest of Europe.

Finally it wants borrowing costs to stay relatively high - perhaps 12 per cent or above - until the broad measure of money supply, sterling M3, is under much firmer control.

Figures released last week showed that sterling M3 was at the very top of its 6 to 10 per cent target range for 1984-85 and above the 5 to 9 per cent range set for 1985-86.

Although the narrow monetary aggregate, M0, is well within its prescribed range, the authorities are aware that if sterling did weaken, the financial markets would focus much more closely on sterling M3.

UK clearing bank considers swap for £35m stake in EAB

BY DAVID LASCELLES, BANKING CORRESPONDENT, IN LONDON

MIDLAND BANK, one of the leading UK clearing banks, is considering swapping its interest in the New York-based European American Bank for an enlarged stake in European Banking Group, the UK-Belgian bank headquartered in London.

Both EAB and EBG are owned by the Eibic consortium of seven European banks, of which Midland is the UK member.

When it acquired Crocker National Bank of California in 1981, Midland was told by the Federal Reserve Board to reduce its 20 per cent stake in EAB to no more than 5 per cent.

Midland has been negotiating with other members of the Eibic group to sell its interest, but that has not proved easy and Midland

had to seek a 12-month extension of the Fed's deadline to next October.

Instead of selling the stake, however, Midland may end up exchanging it for some of the interest of other Eibic members in the European Banking Group (EBG), of which Midland already owns 14 per cent.

According to its latest annual report, Midland carries its EAB stake in its books at £35m. Because EAB is much larger than EBG, the exchange would give Midland a sizeable interest in EBG and make it the dominant shareholder with more than a third of the equity. EBG recently reported that its shareholders' equity was \$139m.

A Midland official would not comment on the course of the negotiations, except to confirm that they

were continuing and that several options were being considered.

The other members of the Eibic group are Amro Bank, Banca Commerciale Italiana, Creditanstalt-Bankverein, Deutsche Bank, Société Générale de Banque (Belgium) and Société Générale (France). Many are reluctant to raise their stake in EAB because they already have sizeable operations of their own in the U.S. EAB has also lost heavily recently.

EBG is profitable, but earnings have been depressed by the need to make large provisions against possible loan losses. Today, the bank launches a novel international share dealing service and will make markets in stocks of multinational financial and chemical companies from four European countries.

Date set for CGE deal with Thomson

By David Marsh in Paris

FRANCE's nationalised Compagnie Générale d'Electricité group is to take over the civil telecommunications interests of the Thomson electronics concern from July 1, 18 months earlier than originally agreed.

The move, which follows wide-ranging shake-ups in the two state-owned groups since their landmark exchange of electronics assets was agreed in September 1983, has been decided to help resolve financial and industrial problems still surrounding the merger.

The decision, announced by CGE, reflects a Government desire to clear up ambiguities in the merger. It will give CGE full control from July over a holding company, Thomson-Telecommunications, set up after the 1983 accord to group important parts of Thomson's public and private telephone business as well as other specialised companies. CGE will exert control through its subsidiary CIT-Alcatel.

CGE already has management control over the company. But until now it has had only a 12 per cent financial stake, with 40 per cent owned by Thomson and 48 per cent owned by the state.

CGE was scheduled to take over full control only on January 1 1987. But the move has been speeded up by the need to define clear financial responsibilities for the Thomson companies, which are still heavily loss-making.

The decision is likely to involve further injections of government finance, probably through the Post and Telecommunications Ministry. It will create a grouping under CGE's control of the world's fifth largest telephone concern, with a turnover last year of FFr 25bn.

But pressing industrial problems remain.

was putting together a plan to raise the new capital.

Elsewhere, the Imperial Savings Association of San Diego, California, raised its estimate of potential losses resulting from the BBS failure to \$4.1m from \$2.1m.

Both Imperial and Wertheim had engaged in complex repurchase and reverse-repurchase agreements with BBS under which they either borrowed or loaned the securities group bonds as collateral for short-term loans.

Separately another savings bank BBS client, Home Savings Association of Florida, reported a \$7m outflow in deposits last week.

U.S. group joins study of new options in clearing systems

BY ALEXANDER NICOLL IN LONDON

A NEW form of link between the world's futures and options exchanges might result from a study of clearing systems planned to start next month involving two London bodies and a Chicago-based clearing house.

The Options Clearing Corporation (OCC), which clears options transactions on several U.S. exchanges, is to join the London International Financial Futures Exchange (LIFFE) and the London-based International Commodities Clearing House (ICCH) in the study.

LIFFE and ICCH have already announced plans to develop a clearing system for both options and futures trading that would be cheaper, more efficient and more technologically advanced than the present

system. They plan to introduce it next year.

Two OCC representatives will join their working party. If a link between OCC's computers and the London system were to result, it might enable market participants to, for example, net out their LIFFE positions against those in the U.S., and to carry over London positions into U.S. trading.

So far, links between markets have taken the form of direct associations between exchanges - most notably between the Singapore International Monetary Exchange and the Chicago Mercantile Exchange.

The Simex move, although offering the prospect of round-the-world trading in futures, has generally been viewed as disappointing. LIFFE believes there may be greater scope

for associations between clearing systems.

"We think that there will be different types of link," Mr. Michael Jenkins, LIFFE chief executive, said. "The clearing houses have to be able to talk to one another."

Trading in options, which provide the right to buy or sell an underlying instrument at a fixed price within a specified period, has been increasing sharply in the past year, especially in Chicago and Philadelphia. LIFFE plans to introduce its first two options contracts in June.

Although the OCC at present handles only options, it plans to expand into futures. U.S. exchanges, however, already have a large number of clearing houses compared with London. The ICCH clears many London markets and some foreign exchanges.

Action-packed Asian tour by Thatcher

Continued from Page 1

feelings are reciprocal, all was sweetness and light, at least in Singapore.

In London, however, Mr. Gerald Kaufman, the opposition home affairs spokesman, went into an Easter rage. Little matter that the Prime Minister was expressing opinions which everybody knew she held long ago, the opportunity was too good to miss.

Mr. Kaufman said that Mrs. Thatcher had become "the enemy abroad," thus hugely entertaining the now thoroughly contented press party accompanying the Prime Minister.

Cautious EEC reaction to U.S. call for talks

Continued from Page 1

● A more vigorous and more public role for the Fund over individual countries' economic policies and their effect on exchange rates.

The EEC sees this increased "surveillance" by the IMF as an important lever in persuading the U.S. to take more notice of their anxiety about its deficits, and the effects of high interest rates and an over-valued dollar on the rest of the world.

It is clear, however, that there will be no comparable consensus on the other two issues on the G10 agenda, which are:

● The need to boost international liquidity by a large allocation of Special Drawing Rights (SDRs), and

● The IMF's own reserve currency, and

Remedies for the extreme fluctuations in exchange rates.

The ministers also gave their blessing to a package of measures to encourage the official use of the European Currency Unit (ECU), already approved by the Ten central bank governors.

This will allow non-EEC central banks to use the ECU as part of their reserves; it will provide for higher market-related interest rates to be payable on official ECU holdings; and it will relax the rules for the use of ECUs for currency interventions within the European Monetary System, even when currencies are not actually at their floor or ceiling.

Bevill, Bresler trustee finds \$5bn in deals

Continued from Page 1

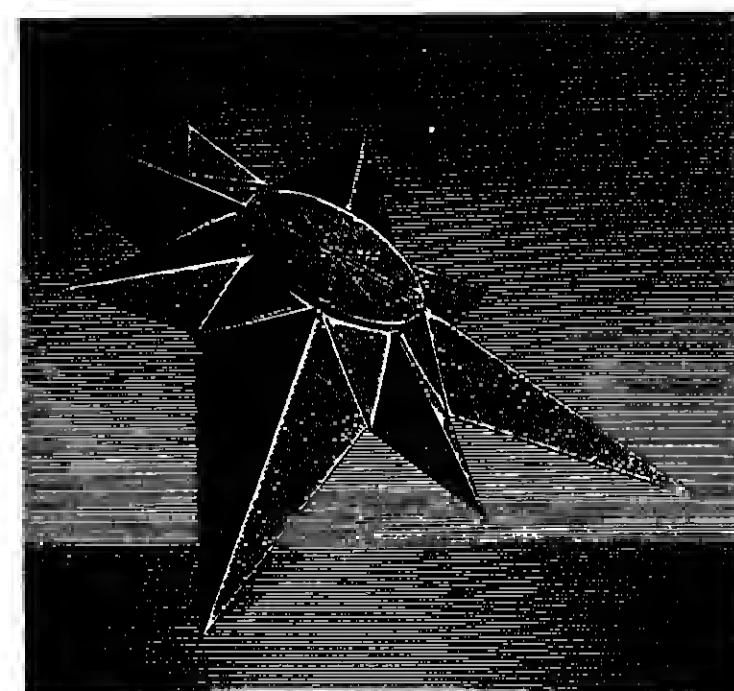
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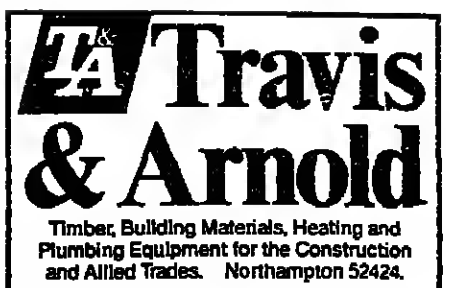
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SECTION II - COMPANIES AND MARKETS

FINANCIAL TIMES

Monday April 15 1985



New era dawns with easing of rules in the D-Mark sector

BY PETER MONTAGNON, EUROMARKETS CORRESPONDENT, IN LONDON

A NEW ERA has dawned in the Euromarkets. On Friday the Bundesbank confirmed that from next month foreign banks would be allowed to lead D-Mark Eurobonds, ending the cosy and lucrative monopoly enjoyed by West German institutions.

Simultaneously the German central bank has opened the door to a range of new capital market products, notably swaps - which it has resisted since last summer - and floating-rate notes, to which it has had a long-standing objection on the grounds that a floating rate is akin to index-linking and therefore a scarcely veiled accommodation of inflation.

Zero coupon and dual currency issues will also be allowed, leaving only certificates of deposit as a significant restricted product. These are not being permitted because of problems over minimum reserve requirements and because an active short-term market might cause difficulties for monetary control.

It all adds up to a major shake-up of the D-Mark sector that should in time lead to a marked increase in the German currency's share of the total international bond market. This has grown considerably since

1980 but was still rather small last year at just over 6 per cent.

But bankers in Frankfurt were counselling some caution on Friday night. The liberalisation is not as complete as it appeared at first sight. First, Japanese banks are being effectively excluded for the time being because there is no reciprocal freedom for German banks in Tokyo. Second, the Bundesbank remains very anxious to keep the new market in Germany where it can keep an eye on it.

For that reason only foreign-owned banks incorporated in Germany may lead issues. This excludes branches and also some of the big U.S. investment houses that are active in the Eurodollar bond market. Some would-be participants will need time to set up the necessary banking operations, and this might mean foreign involvement in the market will grow only slowly.

None the less the opening of their market to foreigners has been a bitter pill for German banks to swallow. That is one reason why they have made so much of the reciprocity issue in talks with the Bundesbank. Some German bankers also believe that the Bundesbank was bowing to international political

D-MARK NEW ISSUE CALENDAR			
Date	Borrower	Amount DM (m)	Lead Manager
April 12	Deutsche Kreditbank	100	Reparische Vertriebsbank
April 12	Chrysler Fin. Corp.	200	BNP-Bank
April 12	Mortgage Bk. of Denmark	150	WestLB
April 15	Kingdom of Belgium	100	WestLB
April 16	Ind. Dev. Corp. of S. Africa	50	Commerzbank
April 17	World Bank	200	Deutsche Bank
April 18	Malaysian Govt.	100	Commerzbank
April 22	Danish Fin. Inst. for Ind.	50	Commerzbank
April 24	Portugal	150	Commerzbank
April 28	Council of Europe	200	BNP-Bank
April 29	Class Finance	50	Commerzbank
April 29	World Bank	200	Commerzbank
April 30	Spain	200	Dresdner Bank

* Private placement

pressure in opening up the market. It may have had little option but to do so given the general movement towards liberalisation elsewhere and the rapidly growing depth and sophistication of markets in the big international centres like London and New York. As with the Japanese yen there is also a feeling that greater opportunities for investors to hold D-Marks might lead to greater demand for the currency and thus help it strengthen against the dollar.

Even though they are worried at the possibility of a disorderly market in which a glut of Eurobonds on fine terms might wreak havoc with

the domestic sector and eat substantially into their profits, some German bankers still argue that they have won a good deal in persuading the Bundesbank to drop its opposition to products such as floating-rate notes. "That was one thing which we requested," said one senior German banker. "We are delighted to have many more instruments available than we used to have," said another.

In the short run the main impact of Friday's announcement is that German banks will no longer set a formal calendar of new issues. Friday's DM 1.74bn programme up till the end of April will be the last

ending a ritual that has been in force since 1980.

Dealers said they were a little taken aback by the size of the calendar - it appears that German banks want to make the most of their last two weeks of privilege. Much depends now on the performance of markets elsewhere. A strong U.S. bond market and weaker dollar could help lift new D-Mark issues off the ground.

The first two issues, 74 per cent private placements for Austria's Kontrollbank and for Chrysler Financial Corporation, got off to a reasonably good start. Whereas Chrysler is not nearly such a good name, it derived some benefit from the fact that this is its first issue in Germany for 18 years. Kontrollbank meanwhile has been a regular and heavy borrower, and Swiss investors particularly tend to shy away from Austrian names for that reason.

Elsewhere, Thursday's rally which permitted the launch of four successful straight issues in the fixed-rate dollar market was not followed through on Friday. European investors remain wary of a weaker dollar, with the result that the U.S. domestic market is again becoming cheaper for borrowers. Only one

new issuer came to the dollar Eurobond market on Friday - Bell and Howell, the U.S. specialised business equipment maker which is raising \$50m with a \$30m tap.

That left the reopening of the French franc Eurobond market by Gaz de France as probably the most striking event of last week. The issue of up to FFr 750m in 114 per cent, 15-year retractable bonds traded around its par issue price from the day of launch, which is an almost unique performance in these days when any bond that simply trades within its fees is regarded as a success. The deal is likely to be followed up this week by a second issue, a FFr 250m deal for the European Coal and Steel Community, expected to be led by Banque Nationale de Paris.

New issue volume was high in Ecus last week, but an Ecu 200m four-year issue launched on Friday for Italy by Morgan Stanley met a muted response because of its low coupon of 9 1/2 per cent. Swiss franc issues closed the week firm.

Arab Banking Corporation has launched a HK\$360m (\$48.2m) five-year floating-rate note, funds from which will be used to finance its purchase of a 75 per cent stake in

EUROMARKET TURNOVER				
Turnover (\$m)				
Primary Market	Straights	Conv	FRN	Other
U.S.\$	440.5	92.7	525.0	77.5
Prev	1,913.2	153.8	1,093.0	79.5
Other	58.3	—	—	68.4
Prev	676.3	0.1	0.7	12.4
Secondary Market				
U.S.\$	12,448.2	653.4	5,338.1	1,253.4
Prev	14,594.4	894.3	6,605.1	1,854.3
Other	1,744.3	15.4	327.1	387.4
Prev	2,895.3	22.9	278.5	1,229.5
Cedat Euroclear Total				
U.S.\$	8,057.0	16,734.4	24,331.4	
Prev	9,447.1	19,780.5	22,227.7	
Other	1,677.0	1,454.2	2,131.2	
Prev	2,539.3	2,581.7	5,121.0	
Week to April 11, 1985 Source: ARD				

Sun Hung Kai Bank Ltd. Reuter reports from Hong Kong.

The note carries interest at 1/2 point over the Hong Kong interbank offered rate and is callable at par after three years. It is led-managed by Citicorp International. Management and underwriting fees are 0.175 percentage point and selling concession 0.2 point. Bank of China and Sun Hung Kai International, the merchant banking arm of Sun Hung Kai Co, are co-lead managers.

On Friday Southern Sun's shares were quoted at R7.10 on the Johannesburg Stock Exchange, valuing the deal at R105m (\$55.3m). The shares to be issued to Safren will represent 21 per cent of Southern Sun's enlarged capital. SAB will hold 68 per cent of Southern Sun on completion of the deal.

Safren will pass the Southern Sun shares to Kersal, Safren's subsidiary which operates the Sun International resorts and gambling chain. In addition, Safren will transfer its liquor interests to Kersal as well as its 36.5 per cent directly held interest in Sun International. As a result Kersal will become the group's operating company with a 21 per cent interest in Southern Sun and 73 per cent of Sun International. In exchange for these new assets Kersal will allot 35m of its own new shares to Safren.

Safren will then hold 79.3 per cent of Kersal, while another 13.1 per cent will be held by Mr Sol Kerzner and his partner, Mr Dick Goss. Mr Goss was until 1983 the managing director of SAB and Mr Kerzner was chief executive of the Southern Sun Hotel.

S. African hotel groups to merge

By Jim Jones in Johannesburg

SOUTHERN SUN and the local Holiday Inns chain, South Africa's two leading hotel groups, are to be merged to form a domestic group with 50 hotels and a virtual monopoly of the middle to upper end of the country's hotel market.

The deal has been approved by the Competition Board, which says it has the potential to increase the number of foreign tourists visiting South Africa.

Terms of the deal are that Southern Sun, which is controlled by South African Breweries (SAB) and which operates 26 hotels, will acquire the 24-hotel Holiday Inns chain from Salfmarine and Rennie Holdings (Safren) in exchange for an issue of 14.8m new Southern Sun shares to Safren.

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CREDITS AND EUROMARKETS

Sweden and Sumitomo Bank embarrassed over deadlocked Euroyen loan

BY OUR EUROMARKETS CORRESPONDENT

THE FIRST large Eurocredit in yen since the market was opened on April 1 has turned into a grave embarrassment for Sumitomo Bank and for Sweden, which is seeking to raise ¥100bn (\$398m).

Sumitomo Bank, which received the sole mandate, admitted on Friday that two weeks into the syndication process it had not yet found a single other bank willing to join the deal. Bankers say it faces a concerted effort on the part of other Japanese banks to resist the terms which include a fine margin of just 1/4 per cent over Libor.

Mr Peter Engstrom, director of

Sweden's National Debt Office, flew to Tokyo over the weekend to complete arrangements for a ¥50bn Samurai bond that Sweden is due to launch this week through Nomura Securities. While there, he is expected to talk to other leading Japanese banks in an effort to break the deadlock on the credit line.

What is already clear, however, is that the deal has proved a highly inauspicious start to the new European credit market. Besides the pricing, Japanese banks appear to have been seized with what some people in the market are calling a fit of pique over the fact that Sumi-

tomo won the mandate on its own. Some claim that it is to collect a special fee, known in the trade as a praecipuum, for arranging the deal, a suggestion that Sumitomo itself strongly denies.

Japanese bankers say they regard the 1/4 per cent margin for Sweden as a dangerous precedent. It would set a benchmark for other high quality borrowers which they would prefer to see somewhere closer to 1/2 per cent. But there is also an argument for saying that such a margin still allows Japanese banks a high return as their funding costs in yen are low. Going

along with it would therefore be one way of keeping non-Japanese banks out of what ought to be a lucrative market.

Unless the deadlock can be broken, Sweden faces an embarrassing choice. It could accept a change in terms on the deal, which would be a serious humiliation for the market's most prestigious borrower. Or it could ask for syndication to be opened up to non-Japanese institutions. But even this might not work since foreign banks face higher yen funding costs and would certainly find the margin unattractive. Japan is in the news for other

reasons too. Late last week the Ministry of Finance circulated draft proposals setting out new capital requirement guidelines for Japanese banks. Details remained sketchy over the weekend, but the proposals are understood to take the form of a discussion document, and it may be as long as a year before any regulatory changes take effect. One suggestion is that underwriting obligations for Euroyen issuance facilities should be given a weighting 30 per cent of that of a loan when capital needs are measured.

This follows a Bank of England circular earlier this month which imposed an immediate inclusion of such obligations in the risk asset ratio used by British banks to measure capital needs. The net thus seems to be closing in on the Euroyen market rather faster than some bankers had expected. Most agree that such requirements will only really bite if they are imposed by all major countries. Even if implemented, the Japanese proposals would probably have only limited effect since most banks are believed to be well within the suggested requirements already. But evidence that monetary authorities are now taking a con-

certed look at off-balance sheet business can only reinforce what is now seen in the market as a slight but perceptible trend towards higher fees on note facilities.

For the time being the Euroyen market seems to be carrying on much as before. Last week, Indonesia was putting the final touches on a \$400m facility, while Fiat launched a \$150m deal through Citicorp. This five-year facility carries a fee of five basis points and allows funds to be raised through the sale of Euroyen or sterling bankers acceptances. There is also a \$100m standby credit



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Crédit Suisse, Zurich Deutsche Bank A.G., Frankfurt
The Development Bank of Singapore Limited, Singapore
French Bank of Southern Africa Limited, Johannesburg
The Hongkong and Shanghai Banking Corporation, Hong Kong
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CRÉDIT LYONNAIS	DAI-ICHI KANGYO INTERNATIONAL LIMITED
DAIWA EUROPE LIMITED	DRESDNER BANK AKTIENGESELLSCHAFT
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January 10, 1985

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*This announcement appears as a matter of record only.
The Notes were offered and sold outside of the United States of America.*



Ford Motor Credit Company

U.S. \$100,000,000

11 $\frac{5}{8}$ % Notes due March 7, 1995

Goldman Sachs International Corp.

Deutsche Bank Aktiengesellschaft

Swiss Bank Corporation International Limited

Union Bank of Switzerland (Securities) Limited

Commerzbank Aktiengesellschaft

Banque Nationale de Paris

Credit Suisse First Boston Limited

Samuel Montagu & Co. Limited

Morgan Stanley International

Société Générale de Banque S.A.

County Bank Limited

Merrill Lynch Capital Markets

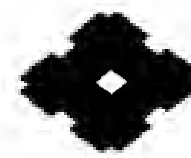
Morgan Guaranty Ltd

Salomon Brothers International Limited

Sumitomo Finance International

March, 1985

*This announcement appears as a matter of record only.
The Notes were offered and sold outside of the United States of America.*



SUMITOMO CORPORATION

*(Sumitomo Shoji Kabushiki Kaisha)
(Incorporated with limited liability under the Commercial Code of Japan)*

U.S. \$100,000,000

10 $\frac{5}{8}$ per cent. Notes due 1992

Goldman Sachs International Corp.

Sumitomo Finance International

Bank of Tokyo International Limited

Credit Suisse First Boston Limited

Morgan Guaranty Ltd

The Nikko Securities Co., (Europe) Ltd.

J. Henry Schroder Wagg & Co. Limited

Swiss Bank Corporation International Limited

Daiwa Europe Limited

Kleinwort, Benson Limited

Banque Nationale de Paris

Deutsche Bank Aktiengesellschaft

Morgan Stanley International

Nomura International Limited

Sumitomo Trust International Limited

S. G. Warburg & Co. Ltd.

March, 1985

*This announcement appears as a matter of record only.
The Notes were offered and sold outside of the United States of America.*



The Kingdom of Denmark

U.S. \$100,000,000

10 $\frac{7}{8}$ % Notes due March 1990

Goldman Sachs International Corp.

Banque Bruxelles Lambert S.A.

Banque Internationale à Luxembourg S.A.

Deutsche Bank Aktiengesellschaft

First Chicago Limited

Kredietbank S.A. Luxembourg

Mitsubishi Finance International Limited

Mitsui Finance International Limited

The Nikko Securities Co., (Europe) Ltd.

PK Christiania Bank (UK) Limited

Privatbanken A/S

Copenhagen Handelsbank A/S

Den Danske Bank
at 1871 Aktieselskab

Kleinwort, Benson Limited

Banque Indosuez

Daiwa Europe Limited

Enskilda Securities
Skandinaviska Enskilda Limited

Kansallis-Osake-Pankki

Merrill Lynch Capital Markets

Mitsubishi Trust & Banking Corporation

(Europe) S.A.

Morgan Stanley International

Orion Royal Bank Limited

Svenska Handelsbanken Group

Yamaichi International (Europe) Limited

March, 1985

*This announcement appears as a matter of record only.
The Notes were offered and sold outside of the United States of America.*



AB SVENSK EXPORTKREDIT (SWEDISH EXPORT CREDIT CORPORATION)

U.S. \$125,000,000

Floating Rate Notes due March 1992

Goldman Sachs International Corp.

Banque Bruxelles Lambert S.A.

Enskilda Securities
Skandinaviska Enskilda Limited

Kansallis-Osake-Pankki

Mitsubishi Finance International Limited

The Nikko Securities Co., (Europe) Ltd.

PKbanken

Takugin International Bank (Europe) S.A.

Westdeutsche Landesbank Girozentrale

Daiwa Europe Limited

Crédit Lyonnais

IBJ International Limited

LTCB International Limited

Morgan Stanley International

Nomura International Limited

Svenska Handelsbanken Group

Tokai International Limited

Yamaichi International (Europe) Limited

March, 1985

INTERNATIONAL CAPITAL MARKETS AND COMPANIES

UK SHORT-TERM SECURITIES

Adventurers needed to test the water

TREASURERS of Britain's biggest companies have been happily dusting off long-shelved strategies for issuing short-term securities in sterling. But the market dramatically opened last month by Mr Nigel Lawson, the Chancellor of the Exchequer, is likely to see a hesitant start until investor preferences become better defined.

Until the Budget, companies wishing to raise money in sterling for less than five years had been unable to issue securities because the strict wording of the Banking Act would have treated them as equivalent to deposit-takers. Mr Lawson promised to amend the Act, though a commercial paper market along U.S. lines will still be barred by a one-year minimum maturity.

Already, Euronote facilities for Imperial Chemical Industries of the UK and John Deere, the U.S. farm equipment producer, have included options for

the borrowers to make use of the new sterling market—which will encompass domestic and Euro-issues at both fixed and floating rates.

There will still be restrictions. Issuers must be listed on the London Stock Exchange or quoted on the junior Unlisted Securities Market, and the new securities must either be listed themselves or be accompanied by the listing particulars which would be necessary for a quotation.

Nevertheless, there are strong signs that the Bank of England is taking a flexible attitude and that the new market will be a stepping stone towards a commercial paper market. The Bank is understood no longer to have any philosophical objection to a small-scale short-term paper market, especially as paper purchased by non-banks would reduce bank lending and end monetary control.

What options will now be open to corporate treasurers?

Currently, the fashionable way for big companies to raise money is through a Euronote facility offering a range of instruments which can be tapped depending on the borrower's precise funding and timing requirements. Now they will be considering whether to include a sterling option in new facilities, or to amend existing agreements.

ICI, whose \$400m facility is led by Citicorp, will be able to issue sterling intermediate term notes through the tender panel system, in which a group of banks determined at the start of the facility is asked to bid when an issue is to be made. The successful bidders then distribute the securities.

Each tranche will not require approval from the Bank of England—as would any normal individual offering—for the Bank will allow the sterling option to operate as a tap within maximum amount and a specified period.

Under the terms of Deere's \$600m facility, led by Merrill Lynch, there will be no tender panel but Deere can seek bids from the syndicate banks and specify the desired terms.

To envisage sterling issues in the terms of a Euronote facility is not, however, to create the market. To do so, treasurers will need to be convinced that the securities would be competitive with other instruments.

For floating rate funds, for example, large British companies can already issue commercial paper in the U.S. and convert the proceeds into sterling through the use of the forward foreign exchange market. Or they can use bankers' acceptances in sterling.

One- to five-year floating rate notes with very frequent payments—say, every 30 or 90 days—would create a comparable instrument to U.S. commercial paper. But it is not yet clear to what extent the Bank of England would allow

this, and it would be a competitive way to raise money only if investor appetite for such paper was found.

Some demand from borrowers may come for fixed rate issues, which could be priced relative to gilts of similar maturities just as dollar bonds are related to U.S. Treasuries. The booming market in swaps, in which borrowers exchange a floating for a fixed interest payment stream or vice versa, indicates a demand for fixed rate funds despite high rates.

Clearly, investor demand will determine the size, maturity range and rate-setting mechanisms of any new market. And given that many of the likely borrowers will be British companies relatively unknown outside the UK, the attitudes of British investing institutions will be important. It remains for a few adventurers to test the waters.

Alexander Nicoll

NEW INTERNATIONAL BOND ISSUES

Borrowers	Amount m.	Maturity	Av. life years	Coupon %	Price	Lead Manager	Offer yield %
U.S. DOLLARS							
Sony 11	100	1990	5	7 1/4	100	Monetta Int.	7.750
Auto. Atlantic (a) 11	115	1983	8	7 1/4	100	Mess. Hancock	-
Linn Bank (a) 11	100	1985	10	7 1/4	100	Barque Paribas	-
Nippon Oil 11	70	2006	15	(3)	100	Yamachi Int. (Eur.)	-
Sanitosa Warehouse 11	30	1999	5	11 1/4	100	Nikko Secs. (Eur.)	11.125
Relston Park 11	150	1993	10	11 1/4	99 1/4	Goldman Sachs	11.819
Victoria Pub. Auth. 11	150	1992	7	11 1/4	98 1/2	Deutsche Bank	11.734
Port Motor Credit 11	100	1992	7	11 1/4	100	CSFB	11.750
Grand Bank 11	75	1990	5	11 1/4	100	Grand Bank	11.750
Credit Ind. et Com. 11	200	1997	12	(6)	100	CSFB	-
Banco di Roma (a) 11	150	1992	7	10 1/4	100	Morgan Guaranty	-
Chase Manhattan (a) 11	250	2000	16	11 1/4	100	Chase Manhattan	-
Nippon Sheet Glass 5	40	1995	10	(3)	100	Deutsche Bank	-
Ball and Howell (a) 11	50	1992	7	12	100	Barque Paribas	12.000
Nor Finance (a) 11	50	1999	2.7	7 1/2	100	United Gulf Inv. Co.	-
AUSTRALIAN DOLLARS							
Pfizerbank 11	478	1991	6	13 1/4	100.8	Salomon Brothers	13.871
NEW ZEALAND DOLLARS							
Nordic Inv. Bank 11	50	1990	5	19	100	Morgan Stanley	16.000
D-MARKS							
Raffa 11	100	1995	10	7 1/4	99 1/2	Ward & B.	7.824
Chrysler Fin. Cor. 11	200	1990	5	7 1/4	100	BNF-Bank	7.250
OKB 11	100	1990	5	7 1/4	100	Bayrische Vereinsbank	7.250
SWISS FRANCES							
Nat. Patent Dev. Corp. 51	99 max	1995	-	5 1/4	100	Bge Gutzwiler, K.B.	5.750
Suntom Realty 51	145	1990	-	1 1/2	100	Credit Suisse	1.500
Mitsubishi Bldg 51	20	1990	-	(14 1/4)	100	Bge Paribas	-
Yusei Canada Pipe 51	150	1995	-	(6 1/4)	100	UBS	-
Oni Electric 51	88 max	1990	-	(1 1/4)	100	UBS	-
Oni Chemical 51	30	1990	-	(1 1/4)	100	UBS	-
FSH Mortgage Bank 51	50	1997	-	(6)	100	Bge Gutzwiler, K.B.	-
Nippon Oil 51	100	1999	-	(1 1/4)	100	Credit Suisse	-
ECUs							
Credito Italiano 11	70	1992	9 1/2	8 1/4	100	Morgan Guaranty	9.875
Chrysler Fin. Cor. 11	75	1993	8	10 1/4	100	Soc. Generale, EBC	10.125
Italy 11	200	1999	4	9 1/4	99 1/4	Morgan Stanley	9.414
PRIVATBank 11	50	1992	7	19	100 1/4	Kreditbank Int.	9.949
STERLING							
Royal Bk. Scotland (a) 11	100	2006	16	1 1/4	100	S.G. Warburg	-
AUB (a) 11	75	1995	10	11 1/4	99 1/4	S.G. Warburg	11.505
FRENCH FRANCES							
EB 11	100	1995	15	11 1/4	99	Credit Lyonnais	12.078
Gaz de France 11	750	2000	19	11 1/4	100	CCF	11.250
GIULIERS							
World Bank 11	150	1990	5	7 1/2	99 1/4	ABN	7.562
Eurofin 11	50	1992	7	7 1/2	100	Amib	7.500
YEN							
Sony 51	300m	2000	15	2	100	Monetta Int.	2.000
Fanuc 51	200m	1995	10	1 1/4	100	Nikko Secs. (Eur.)	1.975
Mitsubishi Ind. 51	150m	1995	10	2 1/4	100	Nikko Secs. (Eur.)	2.500
Saitoh House 51	150m	1995	10	2 1/4	100	Nikko Secs. (Eur.)	2.500
World Bank 51	250m	1990	5	9 1/4	99 1/4	Monetta Int.	9.985
Prov. of Manitoba 51	200m	1995	5	7 1/4	100	Nikko Secs.	7.400
EB 51	300m	1995	8	7 1/2	99 1/2	Yamachi Secs.	7.387

* Not yet priced. † Final terms. ** Private placement. † Floating rate note. † With equity warrants. † 100% cash. † 250m can be exchanged with existing 13 1/4% bond maturing '86; coupon readjusted every 5 yrs. (a) 1/4% over 3m Libor, add 1.00m tap. (b) 1/4% over 6m Libor. (c) 1/4% over 6m Libor. (d) 1/4% over mean of two indices of Swiss foreign bond yields, refixed every 4 yrs. (e) Equal to 6m Libor. (f) 100m over 1m Libor flat, paid monthly. (g) 1/4% over 3m Libor. (h) Add 225m tap. (i) Add 330m tap. (j) 1/2% over 6m Libor. Note: Yields are calculated on ABO basis.

Aerospatiale returns to the black

By David Marsh in Paris

AEROSPATIALE, the French state-owned aerospace group, made a net profit of FF330m (\$53.4m) last year after losses of FF357m in 1983, on sales up 10 per cent to FF25.1bn.

New orders last year rose 57 per cent to FF20.1bn from FF12.8bn in 1983, with foreign orders rising to FF11.6bn from FF4.4bn.

Out of total sales—61 per cent of which came from exports—aircraft and guided weapons represented FF8bn each, with helicopters FF4.8bn and missile systems and space activities accounting for FF4.1bn.

Underlining the commercial efforts being made by the group and the gradual recovery in the aerospace market, M Henri Martre, the chairman, said new orders were expected to rise a further 50 per cent this year.

The group's finances also improved last year with debts dropping from an unusually high FF8.1bn at end-1983 to FF4.9bn at end 1984. Research and development spending rose to FF6.5bn from FF5.8bn.

Consortium to buy stake in Mondadori

BY ALAN FRIEDMAN IN MILAN

SIG CARLO De Benedetti, the Olivetti chief who is also a financier in his own right, is joining a consortium of investors including Pirelli and the Berlusconi television group to take a 24.5 per cent share of Italy's Mondadori publishing group.

The deal is to be accomplished via a capital increase of L58.5bn (\$29.9m) which will dilute the 57 per cent of ordinary shares held by the Mondadori family to 33 per cent and will link the Mondadori and the new consortium in a syndicate of control at the Milan-based group.

This afternoon Mondadori is

expected to announce a L13bn 1984 loss on L390bn of consolidated revenues. This compares with a L4.7bn net profit on a L781bn turnover in 1983.

Mondadori, which last autumn sold its loss-making Rete Quattro television station to Sig Silvio Berlusconi, the television entrepreneur, is facing a heavy debt burden of L380bn, which compares with group shareholders' funds of L80bn. Before selling out its stake in Rete Quattro, Mondadori lost L17bn on the television venture. Last year Mondadori debt servicing

costs amounted to 5.4 per cent of total turnover.

After the increase in capital, which needs to be approved by an extraordinary shareholders' meeting, Mondadori shareholders' funds will approach the L140bn level and debt should be lowered.

Sig De Benedetti has harboured ambitions to own a piece of Mondadori for some time, and following the deal he is expected to have 16 per cent of the control syndicate. Others involved in the deal, which is being co-ordinated by Banca

Commerciale Italiana, are Sig Berlusconi, Sig Vittorio Merloni, the former head of the Confindustria employers' association; Sig Jody Vender, a venture capital financier; and the Pirelli family.

Mondadori, which at the parent company level saw a break-even result on L700bn of 1984 revenues, has been in need of capital since its television losses started mounting. Some 45 per cent of Mondadori's consolidated sales come from its periodicals and advertising businesses, while 25 per cent comes from book publishing.

Messer Griesheim lifts net earnings by 37.5%

BY JOHN DAVIES IN FRANKFURT

MESSER GRIESHEIM, the West German producer of industrial gases and of welding and cutting equipment, strongly increased sales revenue and earnings last year.

The company which is two-thirds owned by Hoechst, the chemical concern, and one-third by the Messer family, lifted revenue 8.4 per cent to DM1,767bn (\$577.9m) while net

profit rose 37.5 per cent to DM 55m.

Economic recovery in West Germany and abroad helped to boost sales of industrial gases, but the company has also been developing many new markets for gases, including their use in food preparation.

The welding and cutting equipment division reduced its loss and is expected to reach break-even this year.

First-quarter increase in profits at BankAmerica

BY PAUL TAYLOR IN NEW YORK

BANKAMERICA, the second largest U.S. banking group, has reported a 13 per cent gain in first-quarter net earnings—but again noted that it continues to be plagued by "higher than normal" loan losses.

The San Francisco banking group, which has been struggling to regain its profits momentum, said net earnings in the first quarter increased

to \$114m or 63 cents a share from \$101m or 55 cents a year ago.

BankAmerica said the earnings improvement reflected higher revenues and efforts to control costs which have included sizeable workforce reductions and branch closures. Net interest income grew by 10 per cent in the first quarter to \$1,028m from \$928m a year ago.

In 9 weeks the leaders of Corporate America will be taking a close look at Britain



Forbes magazine is pleased to announce the publication of a special economic and industrial supplement in the July 1st issue, which appears on June 17th.

American investment in Britain is growing steadily—in the financial and service sectors, in industry, in property and in industrial location.

Because Forbes intends that this supplement will be authoritative and comprehensive, we are delighted that following leading commentators and journalists have agreed to give their expert opinions:

Lord Bruce-Gardyne,
Sunday Telegraph
Ronald Butt,
Associate Editor, The Times
Ivan Fallon,
Deputy Editor, The Sunday Times
David Harrison-Harvey,
Director, Invest in Britain Bureau
Richard Sharpe,
Editor, Computing Magazine
Alan Shelley,
Senior Partner, Knight, Frank & Rutley
Keppel Simpson,
Director, PA Consulting Group

Forbes is America's leading business magazine. Of its 720,000 subscribers, 47% are in top management and 92% own corporate stock. A higher proportion of business leaders in the 1,300 largest American companies read Forbes than any other business magazine.

Any British company or organisation which would welcome investment from the United States, advises on investment decisions or wants to do business in America should participate in this vital supplement.

For further information please contact: Peter M. Schoff,
Director International Advertising
Forbes Magazine
50A Park Mall, London SW1Y 5JQ
Tel: 01-930-0161/2

Forbes
Means Business
in America

Hawker Siddeley 1984 Results in Brief

	1984	1983
Turnover	£1,600m	£1,457m
Profit before tax	£151.5m	£137.5m
Profit after tax and minority interests	£86.7m	£84.9m
Earnings per share	43.9p	43.0p
Total dividend per share	11.8p	11.0p
Shareholders funds	£875.2m	£782.3m

Sales and trading profit by geographical area

	Sales		Trading Profit	
	1984	1983	1984	1983
	£m	£m	£m	£m
United Kingdom	819	823	54.9	70.5
Canada	208	172	24.6	20.0
USA	251	173	35.3	17.3
Australia	227	190	17.1	14.5
Others	95	99	10.2	10.5
	1,600	1,457	142.1	132.8

Annual Report 1984
The Annual Report for the year to 31st December 1984 of Hawker Siddeley Group PLC will be posted to shareholders on 10th May 1985.

Annual General Meeting
The Annual General Meeting will be held at the Darchester Hotel, Park Lane, London W1 on 19th June 1985 at 12 noon. For a copy of the Annual Report, please write to: The Secretary, Hawker Siddeley Group PLC 18 St. James's Square, London SW1Y 4LJ.

HAWKER SIDDELEY GROUP
PUBLIC LIMITED COMPANY

Engineers to the world

Signs of slowing economy spur bond rally

STRAIGHT BONDS: Yield to redemption of the mid-pieces. Amount issued is expressed in millions of U.S. dollars.	100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000	15 105% +0% 7.88	Xerox 13% 67	10/11/87 9' +0% 3.6	10/8/88 30% +3% -0.6
STRAIGHT BONDS: Yield to redemption of the mid-pieces. Amount issued is expressed in millions of U.S. dollars.	100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 1				

HOLIDAY PLANNER

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
CHERRY	6 13 20 27	3 10 17 24	7 14 21 28	4 11 18 25	1 8 15 22 29	5 12 19 26	2 9 16 23 30	6 13 20 27	3 10 17 24	1 8 15 22 29		
JOYCE												
DAVID												
DEBBIE												
BEVERLEY												
PAULINE												
BARBIE												
SALLY												

Now is the season of temporary discontent.

Yet again the holiday season sees your staff being lured away to the world's sun spots. Which can leave you in an even bigger spot. Turning to a temporary help agency doesn't necessarily help. They tend to have neither the staff nor the ability to react quickly enough, leaving you with non-functioning jobs and machines. To compound the problem, they just haven't

kept pace with the radical changes in office technology. The consequences can be fairly dire. Unskilled hands running rampant over equipment that requires the most specific of skills. Perish the thought. Happily, there is another side to the coin. Manpower can supply temporary staff almost as quickly as it takes to pick up a holiday brochure. We also match our people's skills to your

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UK COMPANY NEWS

Offer for sale values
Asda Property at £17.7m

BY TERRY GARRETT

THE FULL prospectus is published today for the offer for sale of 3.15m shares in Asda Property Holdings, a small North London based company operating in both residential and commercial properties.

The company was founded by Mr Manny Davidson in 1964 though it remained largely inactive until 1972 when he departed from the board of Mr Gerald Caplan's property group, London and County Securities, following disagreements with fellow directors. London and County later collapsed in the property crisis of the mid-seventies. Mr Davidson had joined the quoted group in 1970 when he sold a substantial part of his property business to London and County for £2.2m.

The offer is being priced at 17.7p per share which puts a value on the company of £17.7m. Of the shares on offer, 2.8m represent new shares, raising £4.9m for the business. The balance of £12.8m is being sold by Mr and Mrs Davidson.

At the offer price Asda is coming to the market on a 23 per cent discount to pre-forma assets of 22.5p. The company

intends to pay small dividends and concentrate on capital growth. For the year ending December 1984 a payout of 3p is predicted for a prospective p/e of 2.49 per cent at the issue price.

The residential property portfolio has been valued by Allsop & Co. on an open market basis at over £19.4m on December 31, subject to existing tenancies. Within that, some £16.4m is in respect of tenanted flats and houses.

The commercial portfolio has also been valued by Allsop at £17.6m.

Apart from straight property investments the company has an 80 per cent interest in D. W. Bevan, a building company.

Pre-tax profits for the company have grown from £216,000 to £671,000 in the years from March 1981 to 1984.

In the nine months to December 31 1985—the company has moved on to a calendar year-end profits were £612,000. The directors suggest this can be annualised in a straightforward way to suggest profits growth to around £300,000.

It is the company's philosophy

to maximise capital appreciation and to date this has involved a substantial amount of debt financing. At December last net debt of £17.4m stood against shareholders' funds of just under £10m.

Brokers to the issue are Laing & Cruickshank.

● comment

Whatever else Asda is, it is not cheap. The offer price is pitched at a discount to assets of 23 per cent which is, more or less, in line with comparable companies such as Brunel and Warner with large residential portfolios.

Also the group will still be carrying a large slab of debt, even after the offer proceeds are banked, and Mr Davidson's former involvement with London and Counties may raise a few eyebrows even though he was long gone before its collapse.

However, while Asda's portfolio is not exactly prime, the managers are active dealers and the return to be made from buying tenanted properties and selling them on when vacant is not insignificant. So, while there is little reason to suppose that the shares will start trading at a rip roaring premium, this relatively small sized priced offer should get off the ground with little difficulty.

Laidlaw sees
1985 recovery

Mr MacRobertson, chairman of Laidlaw Group, Ford main dealer, says that results for 1984 were satisfactory "bearing in mind the very difficult trading conditions in the first four months, when Ford withdrew incentive payments from its dealers."

Turnover of this USM company increased slightly from £78.8m to £76.1m but taxable profits fell from £1.01m to £817,000.

As forecast, however, the dividend is lifted from 1.88p to 2.5p per share with a final payment of 1.4p.

The group, he states, has made a better start to 1985 than in the previous year.

At the end of the first quarter, internal figures show pre-tax profits some £200,000 ahead of 1984.

Confident
APG on
takeover
trail again

On turnover almost doubled from £412m to £821m, the restructured Allied Plant Group has produced a return to profits of £207,000, against losses of £136,000, for 1984. The directors say that the foundation laid in the recent past gives them "great confidence" for the future.

They say that the "new-found robustness" of the operating companies, referred to in the interim statement, of this plant hire and fork lift distribution concern, was reflected in the second six months, with the annual profit generated entirely in that period.

Following the successful acquisition of United Forktrucks, the directors say they will be looking to selective acquisitions as a means of furthering shareholders' interests.

Earnings per share were shown as 0.94p (losses 1.42p).

The improvement in results was not confined to the revenue statement they say, but was reflected in the balance sheet which disclosed a net asset value of £2.1m against £978,000, and a substantial reduction in capital gearing to 141 per cent of shareholders' funds.

During the year the directors point out that the forklift division showed versatility after it was caught in the first half by the miners' and dock strikes, as it moved away from more traditional industries to an expanding and less vulnerable customer base.

The Adapta group, which makes and hires relocatable buildings and cabins, continued to improve its trading position. The post-acquisition integration of Ferrag took place smoothly and its profit contribution met expectations.

F.T. Share Information

The following securities have been added to the Share Information Service—

Beatriz Mines (Section: Mines-OFS), Callens Holdings (Food, Groceries), Maybaw (Food, Groceries), Quotran Systems Inc (Industrials), Shires Investment IlpeConvUnsls 2008-2004 (Investment Trusts), Sims Catering Butchers (Food, Groceries), Transamerica Corporation (Americans).

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Can they honestly say they would have promised it if they hadn't been fighting a takeover bid?

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SHARES

The Directors of Entrad Investments (U.K.) PLC (including those who have delegated detailed supervision of this advertisement) have taken all reasonable care to ensure that the facts stated and opinions expressed herein are fair and accurate and each of the Directors accepts responsibility accordingly.

Clerical Medical

15 St. James's Square, SW1Y 4LQ 01-930 5474

Executive Investment Pension Plan

	Bid	Offer	Change
Cash Fund	117.8	124.2	+0.3
Mixed Fund	145.3	153.0	-1.0
Fixed Interest Fund	121.9	129.4	-0.1
UK Equity Fund	160.3	169.8	-1.5
Property Fund	111.8	120.9	+0.1
Overseas Fund	151.9	159.9	-2.8
Index Linked Fund	102.3	107.7	+0.2
Stock Exchange Fund	117.8	124.0	-0.9
North American Fund	99.2	104.5	-2.1
Far East Fund	97.2	102.4	-1.2
Special Situations Fund	101.3	106.7	-0.9

Prices 10th April 1985 Unit dealings on Wednesday

Clerical Medical Managed Funds Limited

	Bid	Offer	Change
Cash Fund	148.4	148.4	+0.4
Mixed Fund	210.9	216.2	-1.5
Fixed Interest Fund	191.3	194.2	-2.1
UK Equity Fund	234.7	241.7	+0.3
Property Fund	131.2	137.1	-1.0
Overseas Fund	227.1	238.6	-1.1
Index Linked Fund	116.0	117.7	-2.1
Stock Exchange Fund	121.4	124.4	+0.3

Prices 10th April 1985 Unit dealings on Wednesday

Initial unit prices available on request, telephone 0272 290566

Contracts & Tenders



QATAR GENERAL PETROLEUM CORPORATION

NORTH FIELD GAS DEVELOPMENT PROJECT

The QATAR GENERAL PETROLEUM CORPORATION (QGPC) intend to appoint a Managing Consultant for the first stage implementation of the Qatar North Field Development Project.

The project involves the staged installation of facilities required for the production, transportation and processing of more than 2,000 million SCFD of raw gas from the North Field lying offshore Qatar, with first gas to be processed on shore early in 1988. The scope will include offshore production facilities, production pipelines, onshore gas treatment and fractionation plants and gas liquids export systems. It will also include lean gas domestic distribution, injection and export facilities.

On appointment the Managing Consultant will be provided with the basic design, and will then execute the detailed engineering design, assist QGPC in procurement, and thereafter co-ordinate and supervise the fabrication, installation, construction and pre-commissioning of all facilities. The Managing Consultant will be specifically excluded from tendering for the supply of equipment and materials, for fabrication, and for any construction or site services contract.

QGPC wishes to identify companies suitable for inclusion in a bid list of tenderers for this appointment. A reimbursable form of contract is envisaged with a fixed lump sum fee element. QGPC hereby invites the submission of pre-qualification documents from major international engineering companies, who can demonstrate that they have the proven experience in the region, and the necessary managerial and technical resources to undertake a major project of similar nature and complexity.

The following information should be submitted, together with any additional information considered to be relevant:—

- Details of the company's corporate structure and the part of the organisation it is proposed would undertake this contract.
- Details of the company's financial performance, including copies of the audited accounts for the last five years.
- Details of all contracts for offshore and onshore facilities within the last ten years, which demonstrate experience and proven capabilities on projects of a similar nature and scale to the North Field Development. Information will include, but not be limited to, the scope of service, value, type and duration of the contracts, the capital cost of the projects and the manpower employed.
- Details of manpower currently available in the home office in the various managerial, technical, and project services functions.
- Outline proposals for the management of the project including such details as planning, cost control, procurement, materials management, project accounting and quality assurance procedures.
- Details of existing and anticipated commitments to other projects.

Companies who have previously submitted pre-qualification documents must submit new documentation in full. Three copies are to be delivered not later than 1400 hrs. on 14th May 1985, addressed to:—

MR. MOHAMMED N. AL-FUHAID,
SECRETARY TO THE NORTH FIELD PROJECT STEERING COMMITTEE,
QATAR GENERAL PETROLEUM CORPORATION,
P.O. BOX 3212,
DOHA,
QATAR.

Late submission or the provision of misleading information will exclude potential bidders from all further consideration. QGPC reserves the right to make direct contact with all client references given in the pre-qualification documents. The Qatar General Petroleum Corporation shall not be bound to include any company in the bid list for this appointment. Their choice shall be final and shall not be contested or opposed by any company.

This announcement appears as a matter of record only.



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Placing Agents

Merrill Lynch Capital Markets

S.G. Warburg & Co. Ltd.

March, 1985

Closing prices, April 12

Continued on Page 25

هَذَا مِنْ أَهْلِ

AMERICAN STOCK EXCHANGE COMPOSITE CLOSING PRICES

12 Month	High	Low	Stock	Div	Yld	P	St	12 Month	High	Low	Stock	Div	Yld	P	St	12 Month	High	Low	Stock	Div	Yld	P	St
74	14	14	AL	0	12	26	30	19	14	14	AL	0	12	26	30	19	14	14	AL	0	12	26	30
75	14	14	AMC	0	12	26	30	20	14	14	AMC	0	12	26	30	20	14	14	AMC	0	12	26	30
76	14	14	AT	0	12	26	30	21	14	14	AT	0	12	26	30	21	14	14	AT	0	12	26	30
77	14	14	ATM	0	12	26	30	22	14	14	ATM	0	12	26	30	22	14	14	ATM	0	12	26	30
78	14	14	ATN	0	12	26	30	23	14	14	ATN	0	12	26	30	23	14	14	ATN	0	12	26	30
79	14	14	ATP	0	12	26	30	24	14	14	ATP	0	12	26	30	24	14	14	ATP	0	12	26	30
80	14	14	ATV	0	12	26	30	25	14	14	ATV	0	12	26	30	25	14	14	ATV	0	12	26	30
81	14	14	ATW	0	12	26	30	26	14	14	ATW	0	12	26	30	26	14	14	ATW	0	12	26	30
82	14	14	ATX	0	12	26	30	27	14	14	ATX	0	12	26	30	27	14	14	ATX	0	12	26	30
83	14	14	ATY	0	12	26	30	28	14	14	ATY	0	12	26	30	28	14	14	ATY	0	12	26	30
84	14	14	ATZ	0	12	26	30	29	14	14	ATZ	0	12	26	30	29	14	14	ATZ	0	12	26	30
85	14	14	ATB	0	12	26	30	30	14	14	ATB	0	12	26	30	30	14	14	ATB	0	12	26	30
86	14	14	ATC	0	12	26	30	31	14	14	ATC	0	12	26	30	31	14	14	ATC	0	12	26	30
87	14	14	ATD	0	12	26	30	32	14	14	ATD	0	12	26	30	32	14	14	ATD	0	12	26	30
88	14	14	ATE	0	12	26	30	33	14	14	ATE	0	12	26	30	33	14	14	ATE	0	12	26	30
89	14	14	ATF	0	12	26	30	34	14	14	ATF	0	12	26	30	34	14	14	ATF	0	12	26	30
90	14	14	ATG	0	12	26	30	35	14	14	ATG	0	12	26	30	35	14	14	ATG	0	12	26	30
91	14	14	ATH	0	12	26	30	36	14	14	ATH	0	12	26	30	36	14	14	ATH	0	12	26	30
92	14	14	ATI	0	12	26	30	37	14	14	ATI	0	12	26	30	37	14	14	ATI	0	12	26	30
93	14	14	ATJ	0	12	26	30	38	14	14	ATJ	0	12	26	30	38	14	14	ATJ	0	12	26	30
94	14	14	ATK	0	12	26	30	39	14	14	ATK	0	12	26	30	39	14	14	ATK	0	12	26	30
95	14	14	ATL	0	12	26	30	40	14	14	ATL	0	12	26	30	40	14	14	ATL	0	12	26	30
96	14	14	ATM	0	12	26	30	41	14	14	ATM	0	12	26	30	41	14	14	ATM	0	12	26	30
97	14	14	ATN	0	12	26	30	42	14	14	ATN	0	12	26	30	42	14	14	ATN	0	12	26	30
98	14	14	ATP	0	12	26	30	43	14	14	ATP	0	12	26	30	43	14	14	ATP	0	12	26	30
99	14	14	ATV	0	12	26	30	44	14	14	ATV	0	12	26	30	44	14	14	ATV	0	12	26	30
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105	14	14	ATC	0	12	26	30	50	14	14	ATC	0	12	26	30	50	14	14	ATC	0	12	26	30
106	14	14	ATD	0	12	26	30	51	14	14	ATD	0	12	26	30	51	14	14	ATD	0	12	26	30
107	14	14	ATE	0	12	26	30	52	14	14	ATE	0	12	26	30	52	14	14	ATE	0	12	26	30
108	14	14	ATF	0	12	26	30	53	14	14	ATF	0	12	26	30	53	14	14	ATF	0	12	26	30
109	14	14	ATG	0	12	26	30	54	14	14	ATG	0	12	26	30	54	14	14	ATG	0	12	26	30
110	14	14	ATH	0	12	26	30	55	14	14	ATH	0	12	26	30	55	14	14	ATH	0	12	26	30
111	14	14	ATI	0	12	26	30	56	14	14	ATI	0	12	26	30	56	14	14	ATI	0	12	26	30
112	14	14	ATJ	0	12	26	30	57	14	14	ATJ	0	12	26	30	57	14	14	ATJ	0	12	26	30
113	14	14	ATK	0	12	26	30	58	14	14	ATK	0	12	26	30	58	14	14	ATK	0	12	26	30
114	14	14	ATL	0	12	26	30	59	14	14	ATL	0	12	26	30	59	14	14	ATL	0	12	26	30
115	14	14	ATM	0	12	26	30	60	14	14	ATM	0	12	26	30	60	14	14	ATM	0	12	26	30
116	14	14	ATN	0	12	26	30	61	14	14	ATN	0	12	26	30	61	14	14	ATN	0	12	26	30
117	14	14	ATP	0	12	26	30	62	14	14	ATP	0	12	26	30	62	14	14	ATP	0	12	26	30
118	14	14	ATV	0	12	26	30	63	14	14	ATV	0	12	26	30	63	14	14	ATV	0	12	26	30
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121	14	14	ATY	0	12	26	30	66	14	14	ATY	0	12	26	30	66	14	14	ATY	0	12	26	30
122	14	14	ATZ	0	12	26	30	67	14	14	ATZ	0	12	26	30	67	14	14	ATZ	0	12	26	30
123	14	14	ATB	0	12	26	30	68	14	14	ATB	0	12	26	30	68	14	14	ATB	0	12	26	30
124	14	14	ATC	0	12	26	30	69	14	14	ATC	0	12	26	30	69	14	14	ATC	0	12	26	30
125	14	14	ATD	0	12	26	30	70	14	14	ATD	0	12	26	30	70	14	14	ATD	0	12	26	30
126	14	14	ATE	0	12	26	30	71	14	14	ATE	0	12	26	30	71	14	14	ATE	0	12	26	30
127	14	14	ATF	0	12	26	30	72	14	14	ATF	0	12	26	30	72	14	14	ATF	0	12	26	30
128	14	14	ATG	0	12	26	30	73	14	14	ATG	0	12	26	30	73	14	14	ATG	0	12	26	30
129	14	14	ATH	0	12	26	30	74	14	14	ATH	0	12	26	30	74	14	14	ATH	0	12	26	30
130	14	14	ATI	0	12	26	30	75	14	14	ATI	0	12	26	30	75	14	14	ATI	0	12	26	30
131	14	14	ATJ	0	12	26	30	76	14	14	ATJ	0	12	26	30	76	14	14	ATJ	0	12	26	30
132	14	14	ATK	0	12	26	30	77	14	14	ATK	0	12	26	30	77	14	14	ATK	0	12	26	30
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135	14	14	ATN	0	12	26	30	80	14	14	ATN	0	12	26	30	80	14	14	ATN	0	12	26	30
136	14	14	ATP	0	12	26	30	81	14	14	ATP	0	12	26	30	81	14	14	ATP	0	12	26	30
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141	14	14	ATZ	0	12	26	30	86	14	14	ATZ	0	12	26	30	86	14	14	ATZ	0	12	26	30
142	14	14	ATB	0	12	26	30	87	14	14	ATB	0	12	26	30	87	14	14	ATB	0	12	26	30
143	14	14	ATC	0	12	26	30	88	14	14	ATC	0	12	26	30	88	14	14	ATC	0	12	26	30
144	14	14	ATD	0	12	26	30	89	14	14	ATD	0	12	26	30	89	14	14	ATD	0	12	26	30
145	14	14	ATE	0	12	26	30	90	14	14	ATE	0	12										



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Financial Times Monday April 15 1985

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AA Friendly Society
Investment Mngt M & G Inv Mngt

Property Fund	210.5
Real Estate	210.5
Property Acc.	272.8
Equity Acc.	83.8
Notes Receivable	100.0
Warranty Fund	197.7
Prep. Fd. Ser. 4	224.7
Equity Ser. 4	89.9
Other	100.0
Cont./Warranty Ser. 4	272.8
Plant Int. Fd. Ser. 4	162.7
American Ser. 4	68.2
Hyp. Fd. Ser. 4	214.3
Indebted Int. Series 4	108.3
Janet Ser. 4	108.3
Pension Property	541.8
Other Pension	100.0
Pension Schedules	210.0
Pension Manager	461.1
Pension Security	291.8
Pension Int. Inv.	100.0
Pension Indebted Int.	108.7
Pension Debt	171.5

Albany Life Assurance Co. Ltd.
3, Darius Lane, Potters Bar.

Equity Ind. Acc.	557.9	586
Fixed Income, Fd. Account	122.0	128
Fixed Ind. Acc.	253.3	266
Gen. Money Fd. Acc.	183.6	193
Int'l. Money, Fd. Acc.	247.5	260
Int'l. Fixed Inc. Fd. Acc.	1,043.1	1,074
Japan Fund	35.8	37
North American Fd. Acc.	139.8	147
Prorg. Fd. Acc.	190.6	200
Masterline Inv. Acc.	408.2	429
Perpetual Funds		
Gov. Pm. Fd. Acc.	167.8	176
Euro Fd. Acc.	129.3	136
Fixed Ind. Acc.	453.9	477
Gen. Money Fd. Acc.	203.4	210
Int'l. Money Fd. Acc.	52.5	55
Japan Pm Fd. Acc.	170.6	179
North Am Fd. Acc.	152.3	160
Property	871.5	903
People Inv. Pmts. Acc.	576.2	713
Barclays Life Assur. Co. Ltd.		
252 Rombold Road, E7.		
Barclaybond	577.3	578

Do Initial	289.8	905
Call-roped Account	179.5	109
Do Initial	164.4	175
International Acc	196.1	

De. Initial	100.0	1.00
Assigned Acc.	236.8	2.37
De. Initial	238.5	2.39
500K Acc.	154.3	1.54
De. Initial	744.1	7.44
Priority Acc.	309.8	3.10
De. Initial	320.3	3.20
American Acc.	761.7	7.62
Autosave Acc.	330.1	3.30
Financial Acc.	159.9	1.60
500K Acc.	154.3	1.54
Granger Pac. Acc.	197.1	1.97
Initiation	364.8	3.65
Leasing Acc.	113.9	1.14
500K Acc.	154.3	1.54
Energy Pnt. Acc.	108.0	1.08
De. Initial Ser 2	104.5	1.05
Gr. Egoed Pac. Acc.	240.5	2.41
Int. Pers. Acc.	96.2	0.96
De. Initial Ser 2	79.1	0.79
Manpower Pac. Acc.	365.7	3.66
De. Initial Ser 2	104.5	1.05
Money Pac.	23.5	0.24
De. Initial Series 2	79.1	0.79
Priority Acc.	309.8	3.10
De. Initial Series 2	79.1	0.79
Black Horse Life Ass. Co. Ltd.		

Black Horse Man. Fd.	291.30	
Managed Inv. Fd.	196.83	207.1
Pension Fd.	101.54	120.9

Fixed Interest Fd.	\$57.90	166.25
Cash Fd.	116.06	152.98
Money Fd.	95.52	228.45
Worldwide Growth Fd.	203.01	222.08
Worldwide Growth Fd.	203.01	222.08
Balance Fund	291.58	262.57
Core's & Rascay Fd.	227.44	292.76
Energy Int. Fd.	110.07	119.87
Energy Int. Fd.	110.07	119.87
British North Pacific	167.45	176.27
British National Life Assurance		
Plymouth Road, Haysden Heath.		
Managed	137.2	144.4
Property	139.4	146.4
Energy	146.8	156.4
Technology	126.3	136.4
International	111.4	121.4
Fixed Interest	111.2	121.4
Deposit	109.4	115.4
Property	109.4	115.4
Managed Pensions	134.4	144.4
Property Pensions	134.4	144.4
Energy Pensions	141.3	149.8
Technology Pensions	126.3	136.4

Fixed Int. Pmts. Cap. 111.3 117.2

Canada Life Group

[illegible]

Ind Managed Acc	197.6	203.8
Ind Deposit Acc	156.8	165.9
Ind Gth Acc	150.6	163.6
Ind American Acc	199.5	206.9

Net Monthly Acc.	156.4	167.4
Net Traders Acc.	104.3	112.0
Net F. Exp. Acc.	111.3	136.1
Net F. Inc. Acc.	233.2	281.3
Net H. Inc. Paid/Acc.	224.9	241.3
Net Prop. Proceeds	282.4	267.3
Net Mgmt. Proceeds	254.9	275.0
Net Dep. Proceeds	217.0	230.0
Net Death/Acc.	208.4	216.4
Net Ann. Pmt/Acc.	274.4	311.7
Net Int. Money/Paid/Acc.	206.4	220.5
Net Traders Pmt./Acc.	312.2	318.7
Net F. Exp. Proceeds	116.0	140.0
Net S.I.F.	57.0	91.9
& S.I.F. F.	60.0	60.0

Current value at April 11.

Shieffain Assurance Funds

1 New Street, EC2M 4TP.

Managed Growth	1074.13	212.50
Managed Income	1094.17	109.64

Other prices available on 01-626

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FINANCIAL TIMES SURVEY

Professional Personal Computers

THE LONG expected shake-out in the professional personal computer market place has begun and nothing can turn back the clock. By the time the upheaval is over, the shape of the personal computer industry will have — yet again — changed dramatically.

In less than a decade, this industry has grown from nothing to a billion dollar business and gone through three major changes of emphasis on the way.

● The first phase began in about 1974 with the launch of the first hobbyist micro-computers, often in kit form, like the Altair.

● The second and most significant phase was marked by the launch of the Apple II around 1977, perhaps the first true personal computer, and its use by accountants and others to run Visicalc, best-known of all the spreadsheet-style financial planners.

● The third phase, the move to professional personal computing, was initiated by IBM in 1981 with the launch of its own Personal Computer (PC). That machine, and other manufacturers' machines designed to run identical software ("compatibles") had some 45 per cent of the U.S. market and close to 30 per cent of the European market by the middle of 1984.

There has been a tendency for certain machines to be associated with particular pieces of software: a large number of the IBM PCs purchased were acquired to run an "integrated" software package called 1-2-3 from the Lotus Development Corporation.

The Lotus package, which made it possible for the executive to move easily between spreadsheet, data files and graphics, moved personal computing forward a massive step. Efforts further to increase the

By ALAN CANE

functionality of the package, by adding word processing and communications capabilities, have not proved so immediately successful.

Now the personal computer is about to assume the role of office work station, building blocks of the office of the future. Mr Elserino Pini, vice president for strategies at Olivetti, has forecast that within two years, nine out of ten North American office workers will have electronic workstations, and four out of ten Europeans.

The New York-based marketing consultancy, Frost and Sullivan, point out that the roles of intelligent terminal, word processor and business graphics workstation have now been added to the personal computer's introductory role as a dedicated applications engine for a single user—its use in running Visicalc, for example.

It adds: "During its next generation of development, this wide range of use will be further extended to comprise a range of more-or-less specialist work stations for the manager, executive, designer, computer programmer and undoubtedly

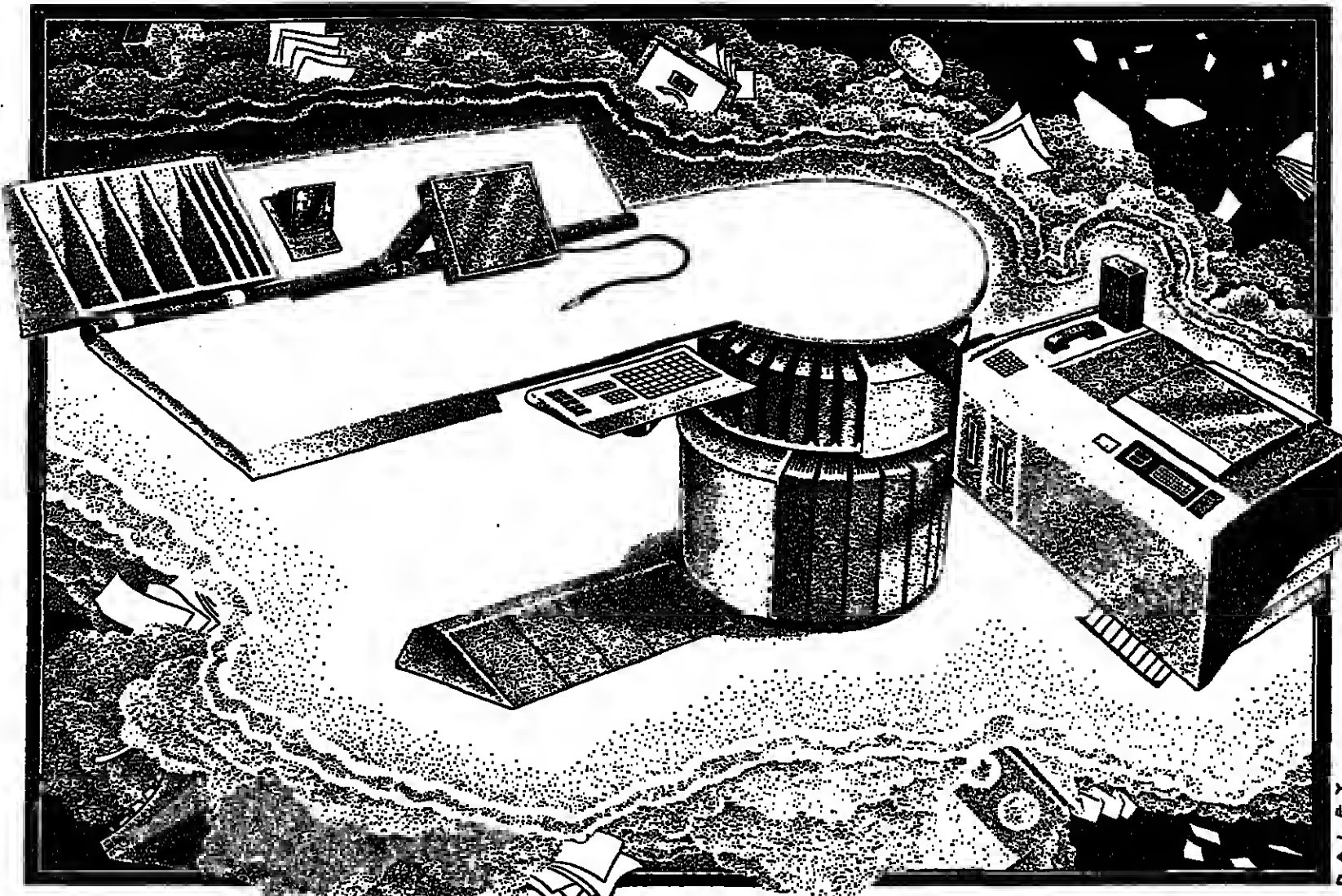
many more. Personal computers will additionally be found as "drivers" of a variety of program controlled devices for which mini or micro-computer based boards had previously been employed.

Examples of the diversity of uses to which the professional personal computer are now being put include:

● **Programmers' workstations:** Business computer software written in Cobol, the common business orientated computer language, is created these days by programmers working at terminals connected to mainframe computers, a process which is expensive in computer time. A single programmer can easily use £20,000 worth of computer time in a year. Now software houses like Micro Focus in the UK and Cap Gemini Sogeti in France have developed ways in which programmers can write, edit and test Cobol programs on a personal computer before transmitting them to the mainframe to be run.

● **Treasury workstations:** Banks are selling aggressively the concept of "cash management" to their corporate clients which means the installation of a computer terminal in the treasurer's office on which he or she can inspect

CONTINUED ON PAGE 2



Upheaval under way in a billion dollar business

● In this survey: the international scene—market developments in the U.S., Britain, France, West Germany, Italy, Japan and the Soviet Union Pages 2 to 5

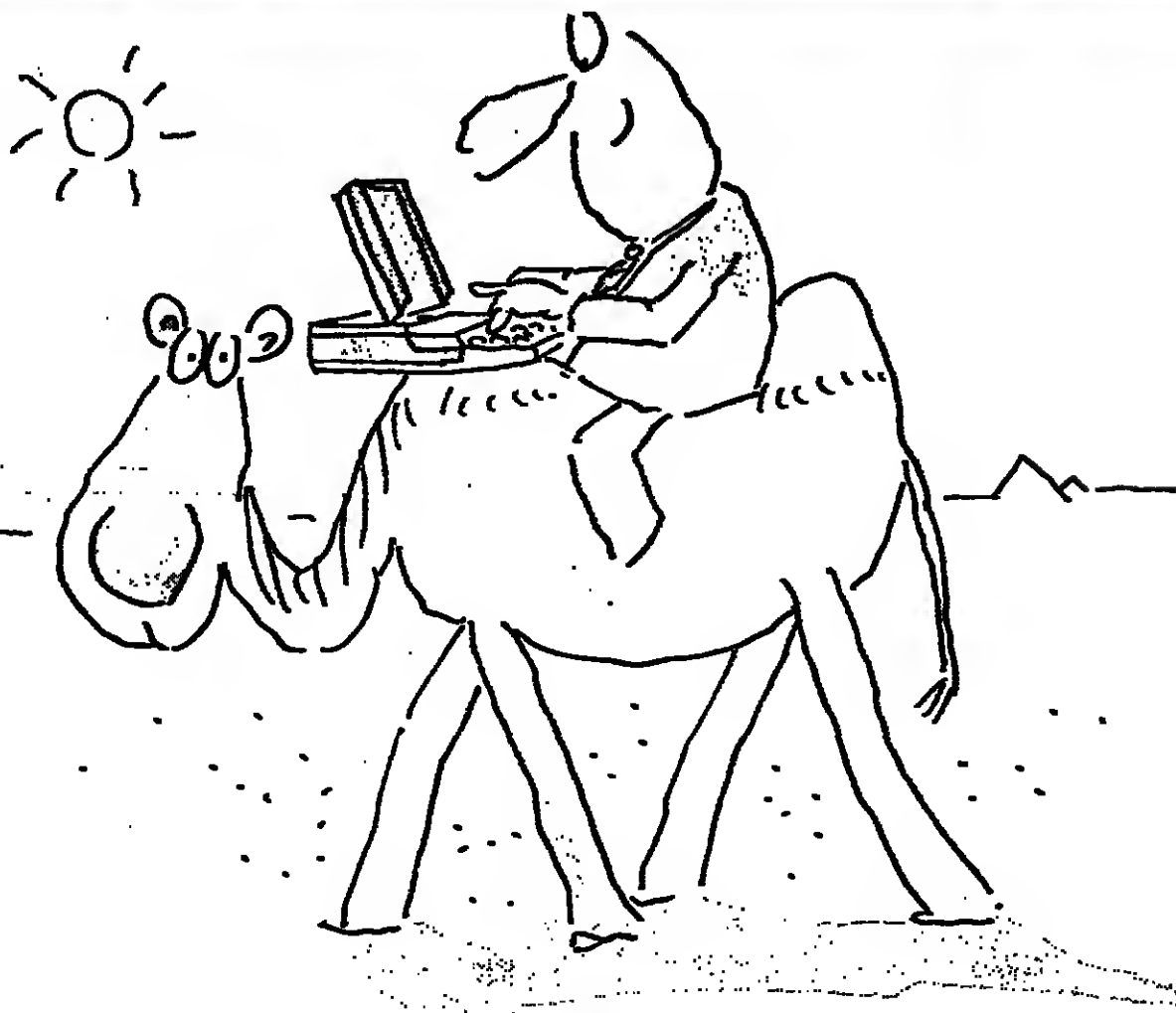
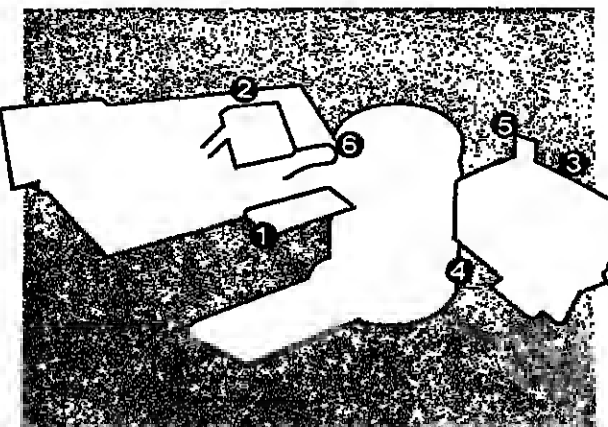
● **Hardware technology:** the impact of technical developments in a fast-changing industry Pages 8 and 9

● **Software:** new operating systems, networking, micro-mainframe links; expert systems, case studies and computer selection Pages 10 to 12

The work station of the future

TODAY'S personal computer is set to develop into the workstation of the future where voice, text, image and data processing are integrated into one multi-purpose unit.

The visionary system, indicated above, may well include: 1, keyboard; 2, screen; 3, facsimile/copier/page-printer/digital reader facilities; 4, electronic storage; 5, voice link; and 6, light pen.



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The only industry-standard PC you can use on a camel.

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The DATA GENERAL/One also has a 512KB memory, almost 1.5MB of integral disk storage and the ability to communicate with mainframes (either directly or from remote locations over telephone lines).

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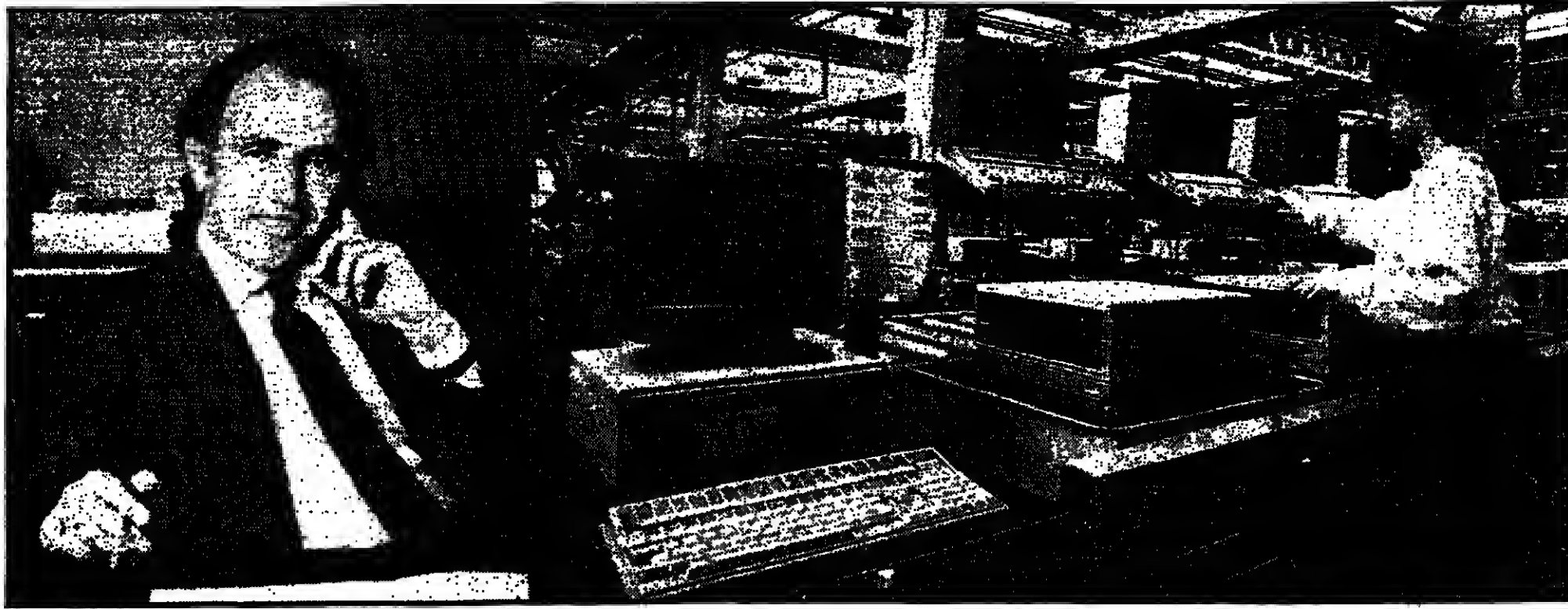
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CFT2

Professional Personal Computers 2

Alan Cane highlights Olivetti's six-point strategy which aims to make it the European alternative to IBM.



Olivetti Group			
Financial highlights in Lbn			
	1983	1982	%
Revenues	3,736.2	3,341.4	+11.8
Research and development expenses	187.3	182.3	+13.4
Operating Profit	468.3	337.1	+39.0
% average invested capital	20.6	17.0	
Net Profit	295.3	102.8	
% revenues	7.9	3.1	
% average stockholders equity	27.4	13.4	
Earnings per share (in lire)	857	318	
Dividend per share (in lire)			
common and preferred	240	300	
saving	260	220	
Internal Finance	616.6	380.8	

* On comparable basis

Source: Olivetti

Sig Vittorio Levi (left), Olivetti's vice president, group operations, and (centre) final tests being made on the Olivetti M24 personal computer at the group's Scarmagno plant.

Olivetti gears up for a global market place

OLIVETTI'S SCARMAGNO plant, surrounded by the Italian Alps and currently turning out 25 M24 personal computers every hour would not seem out of place in Japan.

Driverless trucks, guided by electrical impulses carried by wires under the floor, move sub-assemblies from one location to another. Control computers—CPS 32 fault tolerant machines built by Stratus of the U.S. in which Olivetti has a 10.1 per cent interest, PDP 11s from Digital Equipment, Olivetti's own M40 and M60 minis—sit at strategic points, their screens reflecting the movement of components and machines through the plant.

Most surrealistic of all, an array of M24s sits under test at the end of the production line all running the Microsoft "Flight Simulator" program which is a test both of the power of the machine and of its compatibility with the acknowledged market leader, the IBM PC. It would give an airline pilot apoplexy.

In the despatch area, close to a machine which makes

Benedetti was appointed chief executive officer. Profits in 1979 were only L33.3bn and the ratio of net financial indebtedness to shareholders' equity was 16.8. By 1983, a combination of good housekeeping and a powerful product strategy resulted in profits of L295.3bn and an indebtedness ratio of only 0.6.

Spectacularly successful though the turnaround was, it was not enough to guarantee Olivetti its place in world markets where, through its alliances with AT & T, it is determined to become the credible European alternative to IBM.

"We have to remain number one in Europe and also become a major world leader in the field... in our business you cannot stay in the middle," says Mr De Benedetti.

Specifically, the alliance provides a common approach for the two companies to the design and development of new workstations.

It provides for Olivetti to market AT & T's 3B microcomputer systems which use the Unix operating system throughout Europe and for AT & T to market Olivetti's M24 as the PC 6300

in the U.S. Inevitably, there have been some strains in the matching of two such different companies—Olivetti small, entrepreneurial, well-focused on the office world where all its experience is fixed. AT & T, large, slow-moving and still coming to terms with its new position in the business

'We have to remain number one in Europe and also become a major world leader in the field... in our business you cannot stay in the middle.'

—Carlo de Benedetti

world following deregulation and divestiture.

In the past few weeks Olivetti has announced that it is well down the road in talks with Xerox Corporation of the U.S. which would lead to Xerox distributing the M24 in the U.S.—with AT & T's blessing. Xerox, which despite having created virtually all the concepts which

together constitute the "electronic office" has not been very successful in personal computers. It stopped manufacturing its S20-11 and 16/8 three months ago.

The Olivetti machine is expected to take their place. If the deal goes through, Olivetti will have two major distribution channels in the U.S. in addition to its extensive dealer network in Europe.

It should not be forgotten, however, that although AT & T has agreed to take some \$260m of Olivetti small systems in the next two years, it has agreed at the same time to take an even larger value of personal computers from Convergent Technologies, a rapidly growing U.S. company selling an especially well-favoured machine.

Olivetti's strategy for the personal computer market, according to Mr Vittorio Levi, turns around the office workstation, at present realised in the shape of the personal computer.

Olivetti believes that the supply of these workstations will be in the hands of a few

companies with the corporate strengths to "supply worldwide, manufacture the immense volumes required and with strong marketing and distribution resources."

The strategy is based on: ● A strong global marketing position—about two-thirds of Olivetti's business comes from Europe; it wants subsidiaries in every industrialised nation in the West. It claims to have supplied more than 10 per cent of the personal computers sold in Western Europe in 1983.

● A broad base of technological and industrial innovation through minority shareholdings in a string of companies throughout the world—the list includes Synnex, IPL, Stratus, Digital Research and now Acorn in the UK. Olivetti is brutally realistic about these investments: "If it does not work, we disinvest," says Mr Levi.

● A broad product range for office automation where all the individual systems can be connected together. Olivetti was not particularly fast into personal computers or word processors but it was a pioneer of electronic typewriters. It under-

stood that progress towards the office of the future would be slow and it provided products that matched the pace that best suited its customers.

Its latest office product, launched only two weeks ago, is a family of video typewriters—electronic typewriters with

While the giant IBM hardly fears Olivetti in Europe, the ambitious Italian company certainly has IBM's watchful respect.

much of the capability of word processors but a less frightening leap for the user.

● Commitment to the education market. Elserino Pini says of the Acorn deal: "Acorn's high profile in the education market forms the company's principal role in the new alliance."

● A strong presence in telecommunications through the AT & T alliance.

● Flexible manufacturing facilities and a stable financial base. According to market researchers Frost and Sullivan, Olivetti had an installed base of 55,000 small business computers, 80,000 word processors, 60,000 personal computers and 18,000 scientific computers in Europe by May, 1984.

Frost and Sullivan notes: "It planned (very ambitiously) to manufacture 350,000 M24s and M24s during the ensuing 12 months, 250,000 of these going to AT & T and the balance to Olivetti's own European markets."

"These are levels which are almost certainly highly optimistic."

Olivetti's workforce in Scarmagno, preparing the factory systems which will allow it to turn out 75 personal computers every hour, would not agree.

Whether Olivetti can achieve its ambition to become the European alternative to IBM is for the future to decide, but it is starting from a position of strength. And if it hardly fears Olivetti, De Benedetti's team certainly has IBM's watchful respect.

Major upheaval under way

CONTINUED FROM PAGE 1

the company's balances world wide, move cash from one account to another and pay bills.

Using a personal computer as the terminal makes it possible for the treasurer to receive reports automatically from the company's various branches and to manipulate the information using, for example, Lotus 1-2-3 or a similar program. Chase Manhattan, Citibank and Bank of America are among the leaders in using personal computers in this way.

● Computer aided design: To design engineering components electronically used to take the speed of a sizeable minicomputer because of the computing power needed to create an image on the screen and carry out the necessary calculations so that the image could be manipulated in various ways.

Now companies such as Autodesk in California have developed software costing only £1,000-£2,000 which runs on virtually any personal computer and which brings "personalised" computer-aided design to a whole new range of professions, including architects, property developers and graphics designers.

● Networking: The most advanced personal computers use very powerful microprocessor chips capable of handling 16 or more bits at a time. This new power can be harnessed by sophisticated microcomputer operating systems such as Unix or Concur-



rent DOS—software programs which order the internal workings of the computer—to enable the machine to carry out several tasks at once and to be linked into intercommunicating networks capable of supporting the work of an office group or department.

It is the versatility and low cost of the personal computer which is responsible for the paradox that while researchers, such as Frost and Sullivan, are predicting that in Europe alone, total personal computer shipment values will increase 60 per cent annually to \$3.1bn during 1988 and to more than \$20.5bn over the five-year period to 1989, the casualty rate among new suppliers is rising significantly and some established manufacturers are experiencing a marked decline in sales.

Apple Computer, for example, which has not had the success

it expected with its novel "Macintosh" personal machine, recently closed its factories for a week. It could show little or no profit for this quarter.

Digital Equipment, which created and still leads the world in minicomputers, has recently discontinued its "Rainbow" series of personal machines and is planning to come back with IBM compatible models.

Xerox Corporation has ceased manufacturing its S20-11 and 16/8 machines and is deep in discussions with Olivetti about marketing its well-regarded M24 computer in the U.S. Olivetti has already a reciprocal personal computer marketing arrangement with AT&T which will not be affected by a deal with Xerox.

The hard fact is that although the market for workstations worldwide (for which read per-

sonal computers) could be as large as 130m in the next five years, they will be supplied by a very small number of extremely large companies, able to manufacture huge volumes at very low cost and distribute them worldwide effectively.

Even IBM which, over the years, has proved its ability to become the lowest cost producer of everything from high-speed memories to professional personal computers, pulled out of the home computer market because it could not generate sufficient profits there.

But IBM is one of the few companies whose future in personal workstations seems assured. Only a year ago, Apple would have been in this category but unless it can convince the business community that it is selling a genuinely professional machine even its future is in question.

It is early days to assess the contribution of the combined forces of AT & T and Olivetti (with perhaps Xerox) and the Japanese, despite their manufacturing skills, remain an unknown quantity (but never forget motorcycles, cars or videocassette recorders).

There will, however, always be room for the makers with a specialist niche like Convergent Technology in the U.S. and ACT in the UK.

This "fourth phase" of the personal computer revolution will be the most critical—and only the very strong or very talented will survive.

Frost and Sullivan, Corporate Personal Computers: the market in Europe, 2 vols. Jan 19.

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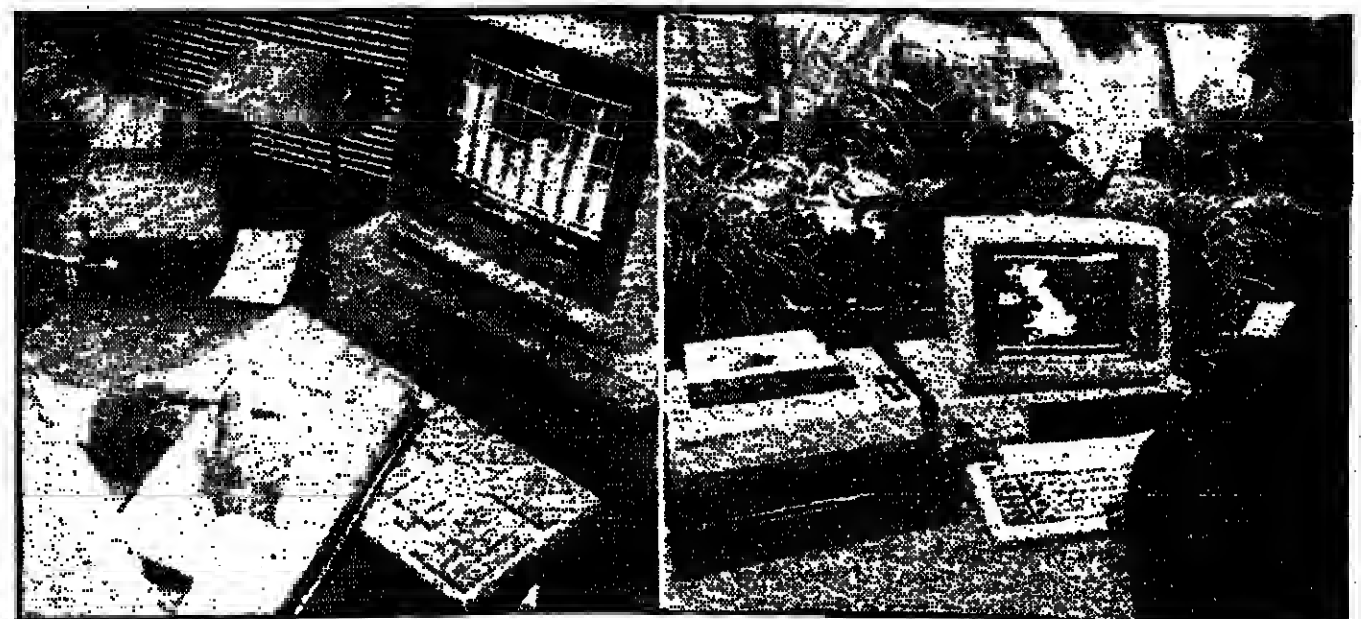
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Texas Instruments' professional computer (left) with the TI speech command system. By means of a microphone or headset, voice input is substituted for keyboard input, leaving the operator's hands free to carry out other tasks. Right: IBM's PC displaying the Prestel viewdata system

Professional Personal Computers 3

Still the largest market in Europe

BRITAIN'S ENTHUSIASM for personal computers shows no sign of abating. The UK market for personal computers is still significantly larger than any other country in Europe and is only beaten by the U.S.

The British market is dominated by Applied Computer Techniques and IBM which have, broadly speaking, equal shares. A long way behind are companies like Hewlett-Packard, Digital Equipment, Olivetti and Apple with relatively small shares of the market.

While ACT is the only strong British presence in the market there are a number of small entrepreneurial companies which are struggling with varying degrees of success for a toe-hold in this booming market. These include Research Machines, Advance, Jarogate and Torch.

There are a number of reasons why the market has been so strong in Britain, despite its comparatively weak national economy. These factors include:

- Britain is the "first stop" for U.S. manufacturers because of the common language. This is particularly important in the computer sector because software for the U.S. market is easily adopted for Britain. (ACT itself started by importing the Sirius computer from Victor Technologies of California.)

- The UK also has very strong indigenous skills in computer technology, even if these have not always been successfully exploited commercially. This expertise has resulted in a number of small companies being set up which have developed their own personal computers. A more important factor is Britain's very strong software industry producing its own programs which, in turn, have stimulated the market.

- Although the UK has a relatively high number of large mainframe computers, it has much fewer small business computers than West Germany.
- There are other intangible reasons which may have contributed to the enthusiasm British business has shown for personal computers. These include: the country's apparent interest in new technologies in the domestic market, particularly home computers. Another reason, according to some analysts, is the strong position of a domestic producer, ACT.

Although the market may be

UK demand surges ahead

JASON CRISP

strong, a number of British companies—including hardware and software companies and distributors—have had problems. A number have found difficulty in developing products or getting them accepted by the market which is inevitably suspicious of small, unproven companies.

One of the greatest problems in the UK sector lies in the distribution of personal computers. There are more than 2,500 computer dealers in the UK but many are small, unable to provide proper customer support, under-capitalised and have too small a turnover to be visible in the long term. There is already a high casualty list as such companies go into receivership.

According to a study by Ramtec, specialist marketing consultants, the top 250 dealers (representing only about 10 per cent of the total) account for 50 per cent of sales of micros to the end-user. It shows how small a market has to be shared between the remaining 90 per cent of dealers.

Inevitably, much attention in the UK personal computer industry is focused on ACT. The company was a moderately successful and well-established computer bureau which started importing the Sirius computer from Victor Technologies in 1981. It was the first 16-bit computer to become available in the UK and had 18 months in which to get established before IBM launched the PC in Europe. ACT had a runaway success with the Sirius.

In late 1982 the company decided to develop and manufacture its own personal com-

puter. It had, correctly, feared that Victor was not well run and not developing the right new products. (Victor later filed for protection under chapter 11 of the U.S. bankruptcy code.)

In less than a year ACT developed and began to manufacture the Aprioc, which is now its main product line. ACT's sales have continued to rise dramatically. In the year to March 1983 turnover was just over £22m which is expected to rise to nearly £100m in the financial year just ended. Last month ACT told City analysts that sales in the current year would be over £180m.

ACT has had success in a number of overseas markets including the Middle East and Australia. It has also recently embarked on a major—but delayed—push into France and West Germany where it hopes for a turnover of £20m this year.

Its biggest gamble is a move into the U.S. where it has set up a new company, Aprioc Inc, with \$30m, partially financed by institutions and existing shareholders. ACT has a 50 per cent stake in Aprioc Inc with an option to take a controlling interest. Although ACT says it only wants to capture 1 per cent of the U.S. market within three years, it would be worth \$150m a year.

Aprioc is, however, running behind schedule because it underestimated the time taken to train dealers. Even so, analysts have not been too concerned to date.

Re-organised

The OPD is a combined personal computer and advanced telephone which is claimed to be very easily used by managers with no computer experience. The OPD was developed in conjunction with home computer group, Sinclair Research, and the software company, Psion. ICL has won significant orders from Telecom Australia and British Telecom for the terminal and is hoping for sales of £100m a year.

The one new family of busi-

UK market values

British market shipments forecast for personal computers in the corporate environment, in values by product type. These values are expressed in \$m at constant end-1984 levels, on an "isold" basis, and rounded to the nearest \$10,000.

Product type	1985	1986
STAND ALONE		
Hardware	132.72	142.50
Software	64.78	106.63
Total value	197.50	249.13
NETWORKED		
Hardware	26.19	79.20
Software	8.91	42.30
Total value	35.10	121.50
PORTABLE		
Hardware	36.88	66.00
Software	22.42	52.50
Total value	59.30	118.50
ALL TYPES		
Hardware	195.79	287.70
Software	96.11	201.63
Grand totals	291.90	489.33

Source: Frost and Sullivan.

Britain is the "first stop" for leading U.S. computer manufacturers. The UK also has very strong indigenous skills in computer technology and software production.

ness personal computers which is unlikely to appear in Britain this year is the ABC range from Acorn computers. Acorn, which make the BBC Micro specialises in the home and education market, had planned to launch a range of eight powerful business computers at the beginning of the year. However, the company found itself in deep financial difficulties at the beginning of this year and was rescued by Olivetti the Italian office equipment and data processing group.

As part of a major reorganisation, Acorn dropped plans to try to market and distribute the ABC range itself. It will, however, sell them to other companies on an original equipment manufacturer (OEM) basis.

The problems of marketing and distributing personal computers in competition with well-established strong companies like IBM and ACT may well prove to be a major hurdle for those small entrepreneurial companies in Britain which still hope to find a niche in the market. Increasingly they are acknowledging that technical brilliance is not enough and are trying to get larger and more powerful companies to sell their products.

The competition intensifies

TEA LEAVES and a crystal ball are probably the best means of predicting the 1985 performance of the U.S. personal computer market. Market data and the conventional indicators of sales and profits have become largely irrelevant in the current state of gross uncertainty that surrounds the personal computer business.

IBM has stated simply that "the market remains strong through the first quarter." Apple Computer, on the other hand, says that the market is "fragile and highly competitive."

Surveys conducted by Info-corp, the Cupertino, California market research company, indicate a dramatic decline in purchases of high-end personal computers, starting in June of last year.

In September, 1984, unit sales of high-end personal computers through retail dealers were at 30 per cent of the growth trend line that had been maintained for the past two years.

Sales improved over Christmas, but much of the added retail sales volume came in the high-end of the home computer sector. Since Christmas, IBM's sales have dipped about 15 per cent, while sales of Apple's Macintosh are down by 45 per cent.

The slowing growth rate of the industry has been attributed to several factors. General economic trends show a slow-down in capital spending, which would impact the personal computer industry as much as any other business equipment supplier. Seasonal fluctuations in the market, while most dramatically seen in the consumer end of the market, are also applicable to business sales.

Another factor is the increasing proportion of business personal computers sold direct by manufacturers. These sales, a portion of IBM's sales, do not show up in the retail surveys.

"The research firms are surveying the wrong people," maintains David Norman, president of Businessland, a major retail chain.

"The business market is very strong. It's the home computer market that's in the pits. Corporate America has a blank cheque for equipment to increase productivity." Changes in the distribution channels for personal computers have certainly added to the confusion surrounding the market. IBM's market share, for example, is variously estimated at between 25 and 60 per cent of the market. More than half of IBM's personal computer sales are now estimated to be controlled by the company—either through its own computer stores or through direct sales.

market conditions that prevailed in 1984 will magnify to become a first storm in 1985. A number of former players will burn in the aftermath.

Several are already feeling the heat. Digital Equipment Corporation has discontinued its "Rainbow" series of personal computers, although the company promises to make a comeback in the personal computer market with an IBM-compatible machine.

Data General has conceded that sales of its Data General/One portable computer have been disappointing. The company has redesigned its portable display to meet customer complaints.

Xerox is another victim of the personal computer market. Despite having created much of the technology that is today used in Apple Computer's Macintosh, Xerox has been unable to capitalise upon its expertise. The company has withdrawn its own personal computers although it is expected to offer machines manufactured by a third party in the near future.

Apple Computer, the second largest U.S. personal computer company, is not immune to IBM's moves either, with its Apple II sales significantly weakened over the Christmas period by IBM's PC Jr. Apple faces a bleak first quarter of 1985. The company is shutting its production plants down for one week as inventory mounts up.

Apple's Macintosh was "left

out in the cold" by competing IBM products at Christmas, according to Apple chairman, Steve Jobs. The company has seen only a "slight improvement" in sales since then.

Now, just as the company is about to begin its major push into the business market it has been hit with the bad news that "Jazz," a Lotus development integrated program for the Macintosh computer, will be delayed by two months.

The problems of the personal computer-makers have spread to impact their suppliers and the retailers who bring their products to the public.

Many independent computer retailers are holding on for dear life, hoping that they will still be in business by the end of the year.

The suppliers to the personal computer industry—chip-makers, disk drive manufacturers and floppy disk suppliers have all been hit hard by the cold realities of the personal computer market which have not lived up to the inflated expectations of a year ago.

The semiconductor industry blames personal computer makers for its current severe downturn which was largely caused by over-heated demand in 1983-84, they believe.

Uncertainty

Disk drive manufacturers have suffered cancelled orders and uncertain demand from their major customers while the floppy disk industry appears to be going through a period of consolidation with major acquisitions including the recent takeover of Dysan by Xerox and the proposed purchase of Verbatim by Eastman Kodak.

Despite the clouds that now seem to be hanging over the U.S. personal computer market, there will be some sunny days ahead in 1985. New products from IBM which are expected to include "PC-2," a replacement for the four-year-old IBM personal computer, and a portable personal computer could boost sales.

Before introducing the new models, IBM is expected to reduce the retail price of its current products. IBM compatible manufacturers are expected to scurry to match the PC-2 and IBM's PC-AT, creating new interest in the market.

Apple does not plan any new computers this year, but the company is expected to move to match IBM's new prices and will fight aggressively for a share in the office market.

Pressures mount in U.S. market

LOUISE KEHOE

Despite the claims of Mr Norman and a small but growing group of disbelievers, market researchers continue to project a slowing growth rate for the industry.

Forrester Research of Cambridge, Massachusetts expects 5-10 per cent growth this year, compared to 78 per cent in 1984. That it is not enough to live up to the expectations—and plans—of many U.S. manufacturers.

IBM, for example, plans to increase its personal computer sales by 30 per cent this year, no matter what the market does. That means winning market share away from competitors.

"1985 will be the year when a number of PC vendors become 1985's trivial pursuit questions," quips George F. Colony, president of Forrester. "Rugged

The worldwide market

Personal computer market percentages worldwide by price class and product

● Systems under \$1,000:

	1984	1985	1986	CAGR 1984-85	CAGR 1985-86
Desktop	6.7	9.0	23.3	24.6	8.9
Portable	2.0	7.5	127.7	30.3	18.7
Total	8.7	27.6	41.0	26.0	8.2

● Systems between \$1,000 and \$6,000:

	1984	1985	1986	CAGR 1984-85	CAGR 1985-86
Desktop	4.7	11.6	14.2	19.8	4.1
Portable	0.1	2.0	3.7	82.1	13.1
Multiuser	0.1	1.2	3.5	84.4	23.9
Total	4.9	14.8	21.4	24.7	7.7

● Worldwide shipments in thousands of units, 1984; data from three major U.S. market research groups.

	Dataquest	Computing	Infocorp	% Spread
IBM PC	780	660	880	33
IBM AT	75	47	60	59
Apple IIE	550	555	440	26
Macintosh	280	281	240	17
Compaq				
Portables	105	132	108	26

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Professional Personal Computers 4

Sales should rise rapidly this year

FRANCE'S professional personal computer market is developing into a battle ground in which French and international data processing groups are exchanging competitive swipes with increasing ferocity.

The country still lags a long way behind both the U.S. and the UK in terms of implantation of micro computers for home and business use. But, partly reflecting France's late entry into the computer scene, sales of machines for business purposes grew by well over 50 per cent last year.

Market analysts predict that sales will continue to advance rapidly this year, despite a relative slowdown in the first months of 1985.

The fight for supremacy is very much an all-American struggle between IBM and Apple—but is strongly coloured by both companies' efforts (highly successful in the case of IBM) to identify themselves and their products as closely as possible with the French scene.

In third place, but coming up strongly with the aid of still continuing Government financial support and a more efficient product and marketing strategy, is the nationalised computer group, Bull. The company last year broke with 20 years of efforts to build up a fully independent French computer industry by unveiling a new micro-computer, the Micral 30, which is compatible with IBM equipment.

In the background is a clutch of other French electronics groups with activities both in the business computer range and in less sophisticated equipment for domestic and educational use.

The profession is currently in a flurry over the impact of the plan, unveiled at the end of January by M. Laurent Fabius, the Prime Minister, to install 120,000 computers in schools and other education establishments by the autumn.

This is not the first school computer project. It superseded a plan already announced in autumn 1983 to tool up schools and universities with 100,000 computers by 1985.

The ambitious new scheme will give a boost to the fortunes of the domestic companies—

Expansion in France

DAVID MARSH

Bull, Thomson and Matra—which look likely to gain the bulk of the orders. And, more generally, the aim of course is to strengthen the hold of "computer culture" in France and narrow the country's gap compared with other leading Western nations.

According to a survey last year from the market research company International Data Consultants, only 1.5 per cent of French households are equipped with a micro-computer (of either the domestic or the professional type) against 11 per cent in the UK and 15 per cent in the U.S.

Small businesses are becoming increasingly interested in information technology, with the proportion of companies of less than 200 employees wired up to computers now estimated at around 15 per cent against only 14 per cent in 1980, according to another survey.

Predictions

But again, France suffers in comparison with other European countries, with a Government-sponsored report earlier this year emphasising that the use of micro-electronics in small businesses was well below the levels in Britain and West Germany.

As for the market itself, Intelligent Electronics, the Paris-based electronics market research concern, believes that

Market comparisons

Market shipments forecast for personal computers in the corporate environment, value by product type. These values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Product type	FRANCE			WEST GERMANY		
	1984	1985	1986	1984	1985	1986
STAND ALONE						
Hardware	86.26	112.35	127.30	96.26	124.95	132.70
Software	27.33	34.54	45.48	31.05	60.99	104.03
Total value	114.08	147.19	172.78	127.31	185.94	242.73
NETWORKED						
Hardware	9.10	20.61	20.40	9.63	23.04	29.20
Software	1.87	7.01	37.60	1.98	7.84	42.30
Total value	10.97	27.62	58.00	11.61	30.88	71.50
PORTABLE						
Hardware	13.75	31.25	37.75	16.50	33.75	66.00
Software	5.75	19.00	45.94	6.90	20.52	52.50
Total value	19.50	50.25	83.69	23.40	54.27	118.50
ALL TYPES						
Hardware	109.11	164.21	255.45	122.39	181.74	263.90
Software	35.45	50.55	128.02	39.93	89.35	198.83
Grand totals	144.56	214.76	383.47	162.32	271.09	462.73

Source: Frost and Sullivan, 1985.

French sales of business micro-computers priced at more than \$1,000 grew by more than 50 per cent in 1984. It is predicting sales of 200,000 this year.

Figures from IDC—although on differing definitions—are appreciably lower. But there is no denying that the overall French computer market last year grew more strongly than in most other European countries apart from Spain. The phenomenon has helped Bull make some relatively encouraging progress in its long haul finally to make profits after years of heavy losses—a process which the company now believes will lead to break-even this year after a reduced deficit of FF 489m in 1984.

Intelligent Electronics believes that Apple headed the business computer league table last year with 50,000 units sold in France—ahead of IBM with 38,000. France is the only major European market where IBM's PC has not yet taken up a commercial lead over Apple—although the PC looks almost certain to overtake its American rival in France this year.

Apple itself puts its French sales last year at 70,000 units, making a turnover of FF 940m—an astonishing increase from 30,000 units (FF 375m sales) in 1983 which well illustrates the pent-up demand in the market.

M. Jean-Louis Gassé, the chairman of Apple's French subsidiary, is predicting further sales growth of 50 per cent this year and denies claims from the retail trade that the Macintosh's sales performance in France has fallen below expectations. In the seven months starting last

June, Macintosh sales in France totalled 14,800 units—making up 31 per cent of total sales in value terms in 1984, he says.

Apple has made contact in recent months with Bull and the also nationalised Compagnie Générale d'Electricité group over the possibility of licensing the Macintosh technology to allow production in France. This would have allowed the U.S. company to profit from M. Fabius's schools computer programme.

Sinclair Research, the British company which is the leader in France's domestic computer market and is increasingly crossing the line into the professional sector, has also been lobbying hard for inclusion in the programme. The company has been in contact with a number of French electronics groups—including CIT Alcatel and another state-owned telephone group CGCT—about subcontracting work in order to manufacture its QL model in France.

The latest Government indications are that the schools plan, however, will exclude foreign companies at least from the initial hatch of orders. So Apple and Sinclair—two to say nothing of IBM—look likely to continue selling their equipment to schools and colleges via "back-door" rather than official routes (for instance, via parent teachers associations or discounting directly with schools).

This method, according to Apple, enabled it to sell 20,000 models to educational establishments between autumn 1983 and end-1984—despite the company's absence from the authorised list of suppliers for schools.

Diebold, the Frankfurt-based information technology specialists and management consultants, have forecast a slowing down in the rapid growth of the home computer market in West Germany, but see a steadily rising market for the higher-priced professional systems.

A Diebold analyst suggests, for instance, that in one higher priced segment of the market (computers priced between DM 5,000 and DM 10,000) sales could grow from 44,000 in 1983

The battle heats up

HERR WOLFRAM NADEBUSCH, sent in by Volkswagen to restore its Triumph-Adler subsidiary to full health, is embarking on a new drive in the professional personal computer market as a key part of his strategy.

Spurred along by the new chief executive, the West German office equipment and electronics company is about to launch new personal computers on which it is setting high hopes. At the same time it is building up a network of distribution and information centres in major cities to improve its marketing prospects in computers and computer systems.

Triumph-Adler's latest moves, which will have an important bearing on the future of the company, are being viewed with great interest by other groups in the West German personal computer market.

With IBM and Apple dominating the business segment of this market in West Germany, Triumph-Adler is among the large number of companies, local and foreign, vying for a respectable share in a growing but dead-end competitive business.

Particularly with the growing emphasis on the integrated office computer systems, home-grown companies such as Siemens, Nixdorf, Kienzle, Triumph-Adler and Olympia are actively pursuing wide-ranging operations.

Being in many ways a conservative country, West Germany has not opened its heart or its wallet to the personal computer quite as fervently as the U.S. or Britain. So far, at least, the spread of personal computers for home use and for business use is by no means as great as in those countries.

But interest seems to be growing, particularly in the commercial area, and market prospects for personal computers, as well as computer systems, are generally viewed optimistically.

Strength

According to a survey reported recently by "Chip" magazine, the West German personal computer market grew strongly last year, even though less robustly than some experts had expected. Sales reached about 500,000 units, consisting of some 400,000 "home" computers and more than 100,000 computers bought more specifically for business purposes.

"Chip" estimated that West Germans were using a total of about 800,000 home computers and more than 300,000 business computers at the end of last year.

The magazine, which carries out a monthly "best-seller" survey in co-operation with Roland Berger, the Munich-based management consultants, and market researchers, says that IBM and Apple lie have been "slugging it out" for market leadership in the retail segment of the market.

First one, then the other has been taking the lead in the monthly race.

Diebold, the Frankfurt-based information technology specialists and management consultants, have forecast a slowing down in the rapid growth of the home computer market in West Germany, but see a steadily rising market for the higher-priced professional systems.

A Diebold analyst suggests, for instance, that in one higher priced segment of the market (computers priced between DM 5,000 and DM 10,000) sales could grow from 44,000 in 1983

to about 85,000 in 1985. In a still higher segment (from DM 10,000 to DM 25,000) sales could rise from 53,000 in 1983 to about 115,000 in 1985.

Theoretically, the professional market still has plenty of potential. After all, only 1 per cent of West Germany's 60,000 general practitioner doctors have a personal computer in use, according to Dr Kurt Eckernkamp, the magazine publisher.

Among the 60,000 dentists, it's the same story, he told a recent conference. Among the 30,000 lawyers, the use of computers is somewhat greater but still relatively slight at 3 per cent.

West Germany's more than 2m work places, ranging from tiny offices and factories to large concerns. According to the Munich-based Infratest communications research organisation, the personal computer had found its way into only about 85,000 of them at the beginning of 1984.

Since then, however, interest has been further stimulated and sales have continued to grow, even though the professional market has been likened to a "sleeping beauty" waiting to be awakened by a prince's kiss.

West Germany's natural caution has been reinforced to some extent by all the uncertainties about computer developments and the dazzling array of choices. Suppliers, it is often said, expect too much of purchasers. There are the familiar problems such as compatibility and complex instructions.

In their efforts to carve out a niche of the personal computer market, West German companies have faced intense competition. But, in fact,

prominent local companies have been showing more signs lately of pressing ahead on the personal computer front.

The merging of data processing and communications technologies has also presented companies with the challenge of widening the horizons of their operations or of filling in gaps in their computer systems spectrum.

Triumph-Adler, which has gained about 5 per cent of the personal computer market in West Germany, is facing a particular test, with Volkswagen anxious to eliminate the burden of losses at its subsidiary.

Its typewriter division has already been streamlined and modernised, and Herr Nadebusch, who previously headed VW's difficult operations in Nigeria, is hoping that the computer division, with its revamped Nuremberg production centre, will reach the point of profitability next year.

VW has already decided to give off Triumph-Adler's loss-making Pertec office computer operations in the U.S. and to bring them under the successful umbrella of the American company.

Triumph-Adler is hoping to achieve higher volume sales of personal computers through tackling both product development and marketing. It envisages that the distribution and information centres being set up in major cities will provide guidance both to its traditional specialist dealers and to large customers.

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The West German market

JOHN DAVIES

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In their efforts to carve out a niche of the personal computer market, West German companies have faced intense competition. But, in fact,

New models

With its Alpbach series, Triumph-Adler notched up sales of 26,000 personal computers last year, compared with 15,000 in 1983. Its new models, the PC18 and the upper bracket P80, are being produced in West Germany in readiness for launching on the local market, after the Hanover Fair in April.

The P80 model, recently introduced in Germany, will be launched shortly on the UK market.

As part of its efforts to strengthen its marketing, Triumph-Adler has already begun setting up its distribution and information centres, initially in Hamburg, Hanover and Nuremberg. It envisages having nine in major West German cities by the end of this year.

The company is setting up

the centres jointly with existing local distributors, but the respective stakes in the investment will vary from one centre to another.

Triumph-Adler decided to move in this direction after concluding that existing distribution and marketing arrangements were not wholly satisfactory, for example in providing the guidance and advice which is often necessary to win complex computer system business.

Herr Nadebusch is hoping that the turnaround will come not only from the new personal computers and strengthened distribution, but also from the new multifunctional System M office communications system now being introduced.

Beyond these developments, Herr Nadebusch has also made clear that he is seeking to establish co-operation between Triumph-Adler and a communications specialist in view of the merging of the related technologies.

The forthcoming Hanover Fair is traditionally an occasion for companies to present new developments, and Nixdorf is again among those which have already given an indication of what can be expected.

Nixdorf is introducing an IBM PC/XT compatible personal computer, designated as 8810/25, which has been developed by Matsushita of Japan to the Federal Republic of Germany's specifications. Nixdorf says it is responding here to the increasing demand from its clientele for IBM-compatible PCs as part of office computer systems.

Another development that is being presented at Hanover is the System-PC 8810/85 in the upper performance bracket.

Now, Telenorma (formerly Telefonbau und Normalzeit) has indicated a new emphasis in its strategy as a result of the merging of communications and computer technologies. On top of its traditional strength in communications, it is increasing its involvement in text and data processing. It will offer a microcomputer developed by Convergent Technologies of the U.S. as an integral part of office communications systems.

The move, however, is seen less as a step into the highly competitive market for standalone personal computers than as a means of maximising use of text and data communications systems.

Nonetheless, Apple does offer customers in Italy a more attractive price than IBM or Olivetti, largely because its initial product is more basic, and is designed with the idea of adding software and other accessories. Thus, an average IBM or Olivetti professional model might sell for L5m to L6m, while the basic Apple II would be available at an average price of L3.5m.

What does the future have to offer? According to Asinofin, the sector's association, 1985 should see continued growth in the Italian market. Of particular importance is the drive to reach smaller businesses and persuade them of the desirability of a professional personal computer.

It must be remembered when speaking of the Italian market, however, that even now the country remains some two or three years behind the pace of other major industrialised European countries. The initial stage of education may be over, but complete cultural acceptance has not yet been achieved by any means.

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Sales double in Italy

ALAN FRIEDMAN

LAST YEAR was a period of major growth for the personal computer market in Italy. Sales of professional models more than doubled from around 38,500 units in 1983 to more than 90,000 last year.

In monetary terms, the personal computer market in Italy was worth more than L500m (£234m) in 1984. Market analysts expect sales in the current year to at least equal those of last year, as the process of educating not just the biggest companies, but also smaller businesses, gets underway in earnest.

Three manufacturers account for around two-thirds of all sales in this sector in Italy. The most important, as in the rest of the world, is IBM, which last year claimed a 30 per cent share of Italian sales, thus outpacing Olivetti, Italy's leading data processing equipment maker.

According to figures prepared by the PGP market research organisation (and generally approved with by other analysts), Olivetti last year came second after IBM, with a 23 per cent share of sales. Apple Computers, which in 1983 had only 15 per cent of the market, was by the end of last year level pegging with Olivetti, in terms of market share.

The fact that IBM has, in the past 12 months, replaced Olivetti as the market leader does not mean that Olivetti is slipping. It is, instead, an example of the redistribution of the market in favour of IBM. In terms of unit sales, for example, Olivetti has increased

volume from around 14,000 per cent in 1983 (when it had 35 per cent of the Italian market) to around 21,000 units last year, according to PGP estimates.

All manufacturers experienced significant growth in the Italian market. As Sig. Giancarlo Capitani, market research director at PGP, explains: "until the middle of last year, even the biggest corporations were still experimenting with the office use of personal computers. But now, there has been a more practical and cultural acceptance of the role of the desktop computer in Italy."

IBM's success in Italy is due in large part to its aggressive promotion and marketing programmes. The U.S. giant is also acknowledged to have excellent distribution channels, achieved, in part, through the acquisition of several key software houses. The American company has also been able to take advantage of a long-standing client list, particularly in the main frame sector.

Integration

Meanwhile, its professional computers models can be easily integrated with its own mainframe systems of its own manufacture, a distinct advantage in selling.

Olivetti, while achieving a quantum leap in the number of models sold to the U.S. as a result of its alliance with American Telephone and Telegraph (AT and T), had had one market. The transition from Olivetti's flawed M-20 model to its superior M-24 has caused biccognis in marketing. Likewise, at certain points during the past 12 months the need to work at a staggering 100,000 work stations in the U.S. for distribution by AT and T led



being used mainly (67 per cent) in medium- and large-size companies. The education sector has been a particularly interesting market. Even if last year accounted for only around seven per cent of total sales.

Price-cuts

Sig. Dario Gnerri, Apple's sales manager in Italy, admits that Apple last year slashed prices on personal models being sold to schools in Italy by as much as 40 per cent. But it should be noted that both IBM and Olivetti also gave huge discounts to schools.

Analysts in Italy as a traditional "dumping ground" for manufacturers.

Nonetheless, Apple does offer customers in Italy a more attractive price than IBM or Olivetti, largely because its initial product is more basic, and is designed with the idea of adding software and other accessories. Thus, an average IBM or Olivetti professional model might sell for L5m to L6m, while the basic Apple II would be available at an average price of L3.5m.

What does the future have to offer? According to Asinofin, the sector's association, 1985 should see continued growth in the Italian market. Of particular importance is the drive to reach smaller businesses and persuade them of the desirability of a professional personal computer.

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Professional Personal Computers 5

Fierce shake-out among manufacturers

Japanese market
MARTIN ROTH

ALTHOUGH JAPANESE companies are several years behind their Western counterparts, they are finally waking up to the myriad benefits of the office personal computer, and are resorting to a variety of tactics to force their generally reluctant managers to move with the times.

At Marubeni Corporation, one of Japan's leading trading houses, officers of the Administration and Planning Section decided they must introduce computers from the top down. So last December they sent the company president and two dozen directors to a resort hotel for three 12-hour sessions of intensive computer instruction.

It seemed to work. The company claims little resistance to its programme to boost computer-usage from 200 personal computers at present to 1,500 machines over the next five years. Each department throughout Japan will have at least two personal computers, integrated with several communications systems, and the company will arrange a series of seminars for the 8,000 employees.

Last year Toshiba Corporation moved to a new 40-storey headquarters, which it dubs the "office of the future." Some 110bn worth of office automation equipment is installed there, including 300 computer terminals and a fibre-optical LAN.

In order to cut down on the sea of papers which traditionally engulfs Japanese offices, senior management severely limited the number of filing cabinets. In addition, to enforce the use of the computers they decreed that no employee can store more than two metres of files.

"They check up on us," says Masaki Mikura of the Public Communications Office. "We don't know when they do it. They must come on Sundays. Every so often our department head gets a memo saying we have too many files."

But he admitted that papers still flood into the office, and that there is sometimes reluctance, especially among older employees, to take advantage of the computers and other machines.

Rarity

Indeed, even at Marubeni and Toshiba the computers reside in their own corners of the office. It is rare to find the Japanese company where senior executives keep a personal computer on their desk, or even near it.

Last year the Japan Information Processing Development Centre (Jipdec), a semi-governmental group, published a major study, "Personal Computer Market in Japan." It notes that "the most typical example of personal computer utilisation at the Japanese company is to have a number of machines allotted to each section for use by certain individuals only (usually female workers) in carrying out of specific tasks."

The report notes that Japanese businesses typically use

their computers only for work such as sales and customer management and inventory control.

No figures of the diffusion rate are available, but it is virtually certain that far fewer personal computers are in the Japanese office than in those in the West. And the Japanese are also surely behind in using computer communications, local area networks (LANs) and databases.

One oft-cited reason is that Japanese businessmen, unlike Western colleagues, are not experienced at using typewriters, and are thus uncomfortable with computer keyboards. Their worries are compounded by the problems of inputting kanji characters. They also say they prefer the "kinship" of doing business face-to-face, rather than electronically.

Indeed, if the professional personal computer is no longer a status symbol in the West it has yet to reach that stage in Japan. The irony is of course that Japan has recently become one of the world's big producers of personal computers.

Japanese companies produced some 1.8m personal computers last year, the majority of them game and home models. In 1978 the figure was just 10,000, but rose to 760,000 in 1982 and 1.1m in 1983. The centre predicts a figure of 2.5m this year, 3.2m in 1986 and 3.8m in 1987.

However, these rapidly rising figures mask a fierce shakeout taking place among domestic manufacturers, with one

casualty already, Sord Computer, Japan's only venture computer business.

In 1980, Sord introduced its own simplified business software programme known as PIPS, which became an overnight success, and its computer sales grew five times between 1980 and early 1984. At one time it held 20 per cent of Japan's personal computer market. But price competition grew intense as huge rivals such as IBM Japan and Fujitsu entered the fray, and market share and profits tumbled.

This February it was revealed that Toshiba will buy more than one-third of Sord's shares, and may eventually take a majority stake.

The overwhelming leader in the professional personal computer market in Japan is NEC, which is thought to have a share of 60-70 per cent. Fujitsu follows with around 15 per cent, while IBM may have about 10 per cent.

NEC's successful strategies include a network of 10,000 consumer electronics stores selling its products throughout Japan. There is also a chain of more than 200 specialised NEC micro-computer shops.

The company's new models are generally compatible with the older ones, and some 40 per cent of the software in Japan is designed for NEC.

Lack of software, in fact, makes it difficult for some companies to compete, especially as there is usually no compatibility between the computers of dif-

ferent manufacturers. Japanese software is generally regarded as being harder to use than that in the West, partly because of difficulties in the language, but also because of a general failure to keep up with rapid developments in America.

Micro Focus claims to be the first British company to sell microcomputer software to the Japanese in 1982 in an initial contract worth £190,000 for a Cobol compiler to support Japanese Kanji characters. In 1983, Micro Focus earned more than £2m and this is seen as a growing sector of the company's worldwide trade.

NEC will not quickly fall from its supreme position, though at least one rival, IBM, is, in the words of an industry analyst, "playing tough," and is believed to be rapidly increasing sales.

New models

It introduced its locally-developed 5550 model 16-bit professional personal computer in March 1983 and followed this with two new models, in October last year and February this year. All models offer strong Japanese-language processing capability.

IBM uses its own sales staff to market these machines to the business world, and it has also adopted an interesting strategy of encouraging a network of independent dealers with close ties to leading companies in key sectors, such as the car and steel industries.

These dealers—now numbering more than 100—create specialised software for use in their sectors, which they sell with the computers. Market observers believe that while the company is most unlikely to duplicate the overwhelming success of its IBM PC in America, it could move into a strong second place behind NEC.

Japanese companies exported 79,000 personal computers to 1982, 256,000 a year later and 405,000 last year. These figures could rise to 571,000 this year, 758,000 in 1986 and over a million in 1987, according to Jipdec.

In January this year Apple announced a major shake-up of its Japanese operations, and in April it introduces a Japanese Macintosh with two Japanese-language word-processing programmes, one aimed at the business market with 8,000 kanji characters.

"We offer an alternative here, just as we do in America," said Robert D. Cory, general manager of Apple Computer Japan.

The company hopes that the operating ease of the Macintosh may attract Japanese businessmen generally reluctant to use personal computers.

Nevertheless, many believe the future lies with those companies which can offer complete systems, and Japan's big electronics groups, such as Toshiba, Hitachi and Matsushita, are targeting this aspect of the professional personal computer business.

Japanese manufacturers

Microcomputer market shipments by manufacturer, 1983

	Unit shipments '000	Percent of total %	Retail value U.S.\$'000	Percent of total %
Casio	45	3.7	81,000	4.1
Fujitsu	60	4.9	50,000	4.0
Hitachi	70	5.8	71,000	3.6
Matsushita	90	7.4	295,000	14.8
Mitsubishi	50	4.1	165,000	8.3
NEC	390	32.1	455,370	22.8
Omni	33	2.7	110,250	5.5
Sanyo	45	3.7	112,500	5.6
Seiko/Epson	0	0.0	0	0.0
Sharp	290	23.9	326,250	16.3
Sony	0	0.0	0	0.0
Sord	35	2.9	122,500	6.1
Toshiba	49	4.0	144,000	7.2
Other	46	3.9	36,800	1.7
Total	1,214	100.0	1,999,670	100.0

Source: Creative Strategies International

NEC's successful strategy includes a network of 10,000 consumer electronic stores selling its products throughout Japan. There is also a chain of more than 20 specialised NEC micro-computer centres across the country.

"At present, Japanese offices are islands of automation," said Richard Greer, senior representative in Japan of Baring Far East Securities. "But eventually all these various hives—the personal computer, facsimile machine and so on—will be linked together, along with more elaborate filing systems and a private branch exchange. Local area networks will become common. Stand-alone word processors, which are still much-used, will disappear. The whole scene will

become even more competitive. It will become necessary to offer a complete office system, not just to big offices but to small ones as well." Some manufacturers are already strong in office systems, he says, "but otherwise the firms which do well will be those with good distribution or with one good product in a system, such as Ricoh with its facsimile or Canon with its laser printer. Some of the smaller companies will get knocked out of the market."

The introduction of personal computing is at a very early stage in the Soviet Union, but the Politburo is clearly giving the issue urgent attention.

Big barriers yet to be overcome

THIS SEPTEMBER the Soviet Union will start a major programme of installing personal computers in schools. Initially, special computer rooms will be organised, each with 15-20 computers per room in 200 secondary schools and in 300 training units.

Looking towards the end of the century, the plan is to have 70,000 such rooms.

But the immediate problem is that there are insufficient instructors trained to use personal computers and two Soviet computers—the Agat and the Timur—are not produced in sufficient numbers at present.

Initially, computers will have to be purchased from abroad. This will leave the Soviet Union with too few computers in schools and factories, given the priority which the new technology is being given by the authorities. It has been the subject of Politburo meetings in recent months and heavy investment is likely to be seen in the 1986-90 Five-Year Plan which is now being drawn up.

Nor are the barriers to the use of personal computers solely material.

"It is the fact that the overwhelming majority of mathematics and physics teachers are often full of good ideas that are pigeon-holed because their practical application would disrupt the traditional planning mechanism."

Change in the schools, the training of teachers and the development of manufacturing capability will all have to happen quite rapidly—which implies a degree of reliance on foreign experience and technology, probably under a joint manufacturing agreement.

Soviet specialists are aware of the extent of problems faced. They say that personal computers only became commonly available in the West after 1978 but this understates the extent to which the Soviet Union has fallen behind because of the limited development of a manufacturing capacity for computers of any kind.

In the city of Minsk, for instance, there will still be only one computer for every five schools by 1990.

Shortages

If, from September, students in the last two years of the 11-year course in Soviet schools have to be educated to use computers then, in some cases, the training will be purely theoretical—possibly aided by courses on television.

This is not really good enough. It will clearly be well into the 1990s before Soviet schools have achieved a high degree of computer literacy.

In industry, similar problems have to be faced because of lack of experience. Academician N. P. Fedorenko, director of the USSR's Academy of Sciences' Central Mathematical Institute says that studies show that the computerisation of planning of plant "makes it possible on average to save five to ten per cent of capital investments and to reduce the unit cost of output by five to seven per cent in comparison with plans drawn up by traditional methods. The application of models for optimising the methods of production and using the output of branches reduces capital in-

Computing in the Soviet Union

PATRICK COCKBURN

vestments by 8-10 per cent and planned operating outlays by 6 per cent."

But these theoretical advantages are not enough to encourage the use of computers. Many Soviet managers, as studies show, have concluded that the advantages of computers to offices are "too limited" and they are not worth the hard outlay.

Even when management is made more efficient, there is also a problem that managers do not receive any incentive for introducing computers of any kind. The production indices that Soviet managers have to satisfy do not show the benefits of computerisation, complain Soviet proponents of computers.

Resistance

Soviet organisations often dislike the idea that they will have to alter their methods of storing information.

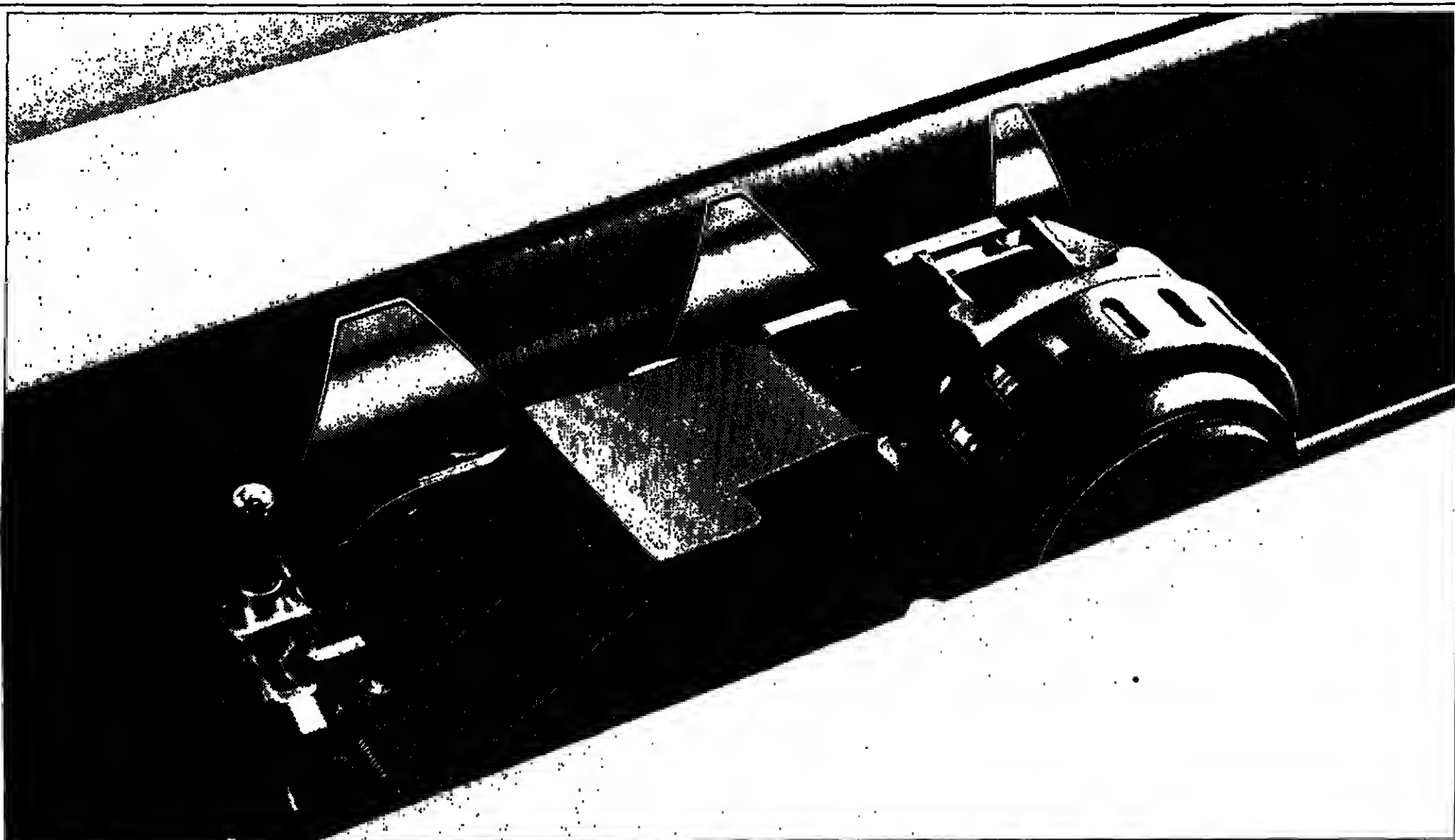
Mr Fedorenko says that the main difficulty in business is that "there is insufficient material interest in the use of computer information, despite their obvious advantages and effectiveness from the standpoint of the interests of the national economy."

The difficulty is not confined to the use of computers. Soviet economists and scientists are often full of good ideas that are pigeon-holed because their practical application would disrupt the traditional planning mechanism.

The introduction of computers clearly faces such obstacles, as have other attempts to shift towards quality production and new methods of manufacturing. Such difficulties still need to be overcome, even though the Politburo and the Central Committee have clearly given computers, especially personal computers, a high degree of priority.

For the speed with which such equipment is now introduced depends, not merely on alterations in Soviet schools and offices, but on heavy investment in the next Five Year Plan. A change in attitude by managers, the training of teachers, and the teaching of students all require the rapid creation of computer manufacturing capacity. The level of computer penetration is still far too small, even a quarter of a century after the first computer was introduced into a Moscow school in 1960.

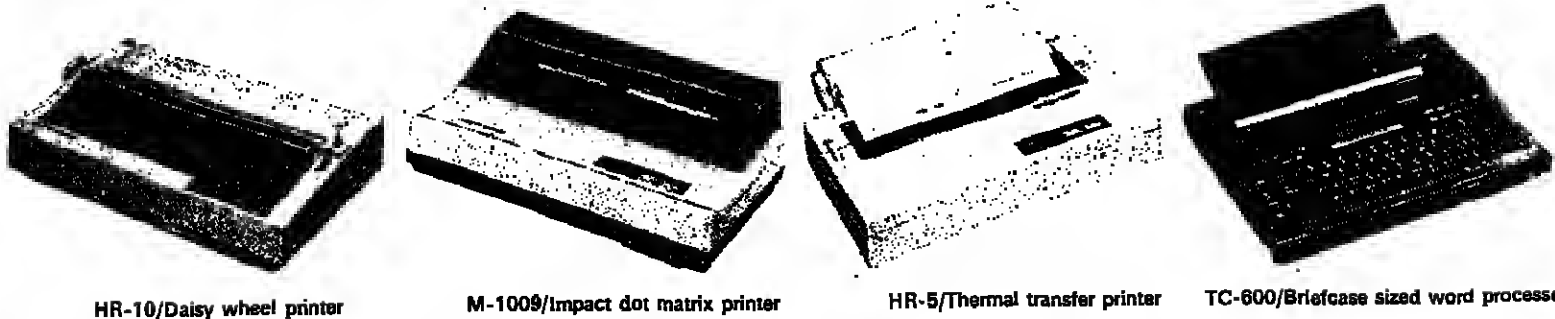
The gap between supply and demand for computers can be bridged initially by foreign imports, but these will only provide the first stage. By the end of the coming Five Year Plan the Soviet Union needs to be able to produce personal computers in large numbers if it is to make up for the time lost over the last decade.



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MICFT 15.4

Professional Personal Computers 8

Hardware technology: FT writers highlight the major advances and the impact on a fast-changing industry

A race to produce tiny but rugged machines

THOSE WHO doubt the viability of the portable computer market may have to alter their opinions in a hurry this year if current speculation proves correct and IBM launches a briefcase-sized personal computer.

It would give an immediate legitimacy to a market which, despite enthusiastic forecasts from analysts (62 per cent of all personal computers will be portable by 1986, one says) and the success of companies like Compaq and Epson, has for many still to prove itself.

Gompaq, for example, has shown dramatic growth, based on sales of a "luggable" suitcase-sized portable which it claims to be completely compatible with IBM's desktop Personal Computer (PC). It reported sales of \$329m in 1984.

That figure represented a 196 per cent increase over 1983, the company's first full year of operation. It claims to be the fastest start-up success in U.S. business history and to be the number two, world wide, in the 18-bit personal computer industry.

And although Compaq now manufactures a full range of desktop personal machines, its success was, and is, based on portable computers.

Many of the leading computer and electronics manufacturers have now launched what can broadly be called portable computers although that description covers a wide range of machine types.

At the weighty end there are the "luggables," machines like the ill-fated Osborne, the highly successful Compaq and IBM's own Portable PC.

Complete with video monitor, disc drives and transformer, they are simply too heavy and bulky to be carried comfortably in anything larger than the boot of a car.

The next category are described as "lap computers"; small enough to be carried in a briefcase they are commonly distinguished by some form of flat screen display and battery operation. This group includes machines like the UK designed and built Husky Hunter, the Texas Instruments Pro-lite and the Epson FX-8.

Then there are a variety of "pocketable" machines, from image on the screen and the

New portable computers

ALAN CANE

tiny computers, a little higher than pocket calculators with rudimentary alphanumeric keyboards making it possible to program them in Basic, to the remarkably sophisticated Hewlett-Packard programmable calculators and the Pison "Organiser," a pocket computer designed to store, for example, lists of names and addresses or carry out financial calculations.

The chief thrust in portable personal computer design today is to achieve the right mix of portability, power and functionality.

Luggables like the Compaq have all the power and functionality of an orthodox desktop computer, but they fall short on what most people understand by portability.

Lap computers are very close to that ideal but frequently disappoint on power or capability. The Data General One, for example, a very expensive (£2,490) and very powerful IBM compatible lap computer broke through one barrier last year with a flat liquid crystal screen displaying 25 lines of 80 characters—the size of a conventional IBM PC screen.

Requirements

Users, however, were not impressed with the quality of the image on the screen and the

DG One has not been the success the company hoped.

As Mr Dan Terpack, general manager of Hewlett-Packard's portable computer division, has said: "A portable computer has got to be powerful and it has to be a full function personal computer. If you make compromises, you are going to be in trouble."

"The machine should be small, light and it should run on batteries. It should be very reliable and very rugged. It should carry its own electronic documentation."

"It is all to have a very small portable product weighing less than 10 lb and carry 12 lb of documentation around with you to be able to understand how to use it. And because many computer applications really relate to accessing, other sources of information, inherent communication capabilities in the machine are very important."

So manufacturers are aiming for a tiny rugged machine with all the functionality of a full-sized desktop computer. The chief problem until now has been the screen. Conventional cathode ray tubes are cheap and efficient for desktop machines, but impossibly bulky in a portable.

The simplest and cheapest solution to date has been to use liquid crystal technology—Japanese companies, such as Hitachi and Panasonic, are well advanced in this technology and it was their research and development which led to the 25 lines by 80 character screen featured in the Data General One.

But, as Data General and its prospective customers discovered, a large liquid crystal screen has all the defects of the smaller displays used on machines such as the Epson FX-8, the Hewlett-Packard Portable and the Tandy 100 and 200.

The characters are difficult to see in poor light (liquid crystal displays become clearer as the incident light becomes stronger)



Data General's personal computer now has an improved version of the liquid crystal display screen plus a new tilt mechanism

and the viewing angle is critical.

Solutions

Almost any technological problem can, of course, be solved at a price. Grid, a U.S.-based pioneer of portable computers, solved the problem through the use of an electro-luminescent flat panel display consisting of a matrix of 320 by 240 picture elements (pixels), each represented by a single binary digit in the computer's memory.

This approach gives extremely fine control of the screen image as each individual pixel can be turned "on" or "off" by the processor—it makes it simpler for Grid to combine text and graphics on the same screen.

The resulting image is sharp and clear, every bit as good as that generated by a cathode ray tube. But the Grid Compass costs almost \$8,000, well out of the range of portables like the Hewlett-Packard at £2,995 or—for another category user—the Olivetti M-10 (£399).

So Grid has sold well to the military, to security operations and to field engineers (as Husky, which makes a very rugged machine, does in the UK) but in comparatively small numbers to the business community.

In the past few days, Grid has launched a new family of machines, GridCase.

The new machines are as compatible with the IBM PC as is the Compaq portable and have a built-in 3.5 inch microfloppy disk drive.

They feature "plug-in software" written into read-only memory chips which can be plugged into sockets to give instant access to the programs they contain, and they run off rechargeable batteries.

Earlier, Grid machines were mainly powered because of the requirements of the electro-luminescent screen.

The new machines feature three screen options—a grey liquid crystal, a yellow liquid crystal, and a red gas plasma. All are 80 characters by 25 lines. GridCase is still significantly more expensive than most of the lap portables available now. The starting price is around \$2,975, top-of-the-range; and with the plasma display it is over \$6,000.

It remains to be seen whether customers will be prepared to pay these prices for the functionality that Grid undoubtedly offers.

And if IBM does offer its own version of lap portability in the next few months, it will be fascinating to see how IBM resolves these critical dilemmas in portable computing.

Laser systems bring shift in the market

Advances in printers

GEOFFREY CHARLISH

AFTER a number of years in which the laser printer has been seen as a high cost, high volume product for large computer installations, the technology is coming down market and is already upsetting established manufacturers' positions in the U.S.

Until recently the tendency has been to think of printers in "horses for courses" terms—high speed line-at-a-time machines for the conventional computing room, dot matrix for office printing, daisy wheel for producing letters and executive documents in word processing.

But the fact is that the laser printer and its derivative, the light emitting diode (LED) machine, if they can be produced and sold at an acceptable price, can offer office automation users all the advantages of the other types in one machine—speed, letter quality, text, graphics, reliability and, of increasing importance in the modern office, quietness.

Furthermore, this desirable combination of attributes nicely matches the trend towards office automation systems which, by definition, have to handle any kind of work quickly and quietly, be it text, data or graphics, or a combination of all three.

York stockbrokers Butcher and Singer, the U.S. printer companies, until recently dominant in the market, have been caught napping.

Because they have no background in laser or xerographic printing technology, and have not been competing, they are now badly positioned to participate, says the broker.

It is companies with a background in printer making, other technologies are also beginning to make themselves felt, notably ink-jet, magnetic, thermal, and even systems that use liquid crystal techniques. They all have two vital advantages: they are flexible (under built-in computer control) allowing any font, graphics, and in some cases colour to be printed, and they are non-impact and therefore quiet.

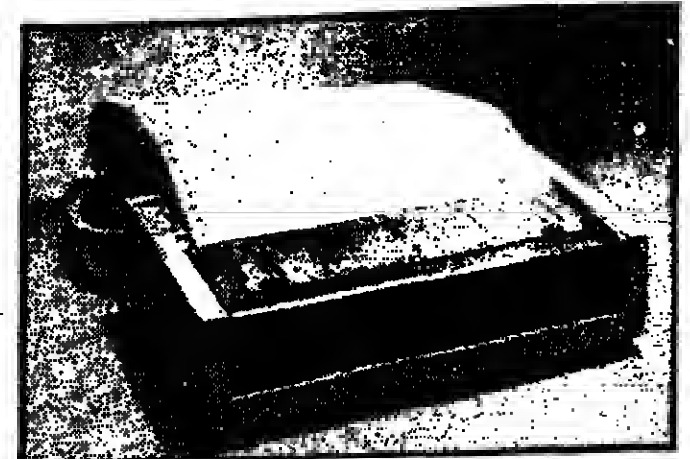
While the top end high throughput, modulated laser beam across the page, the laser oriented machines often use a line of tiny light emitting diodes (LED) in a print bar extending across the page width. These are switched on and off very quickly under computer control to form characters and graphics while a photosensitive drum is rotated beneath.

The drum is simply an electrically charged cylinder which is discharged by light from the LEDs in areas where no characters or graphics exist. As the drum rotates, its surface passes through a "bath" of black powder (toner) which sticks to the print areas by electrostatic attraction and is then transferred to the paper. By passing the paper through heated rollers the toner image is sealed permanently on to the surface.

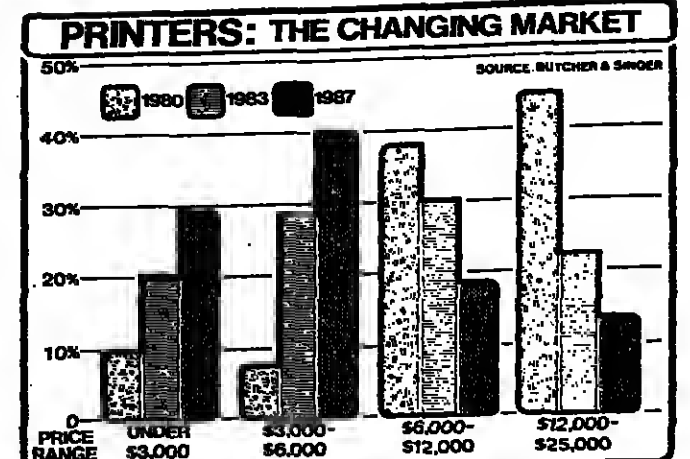
Such systems do away with the precision mirrors, bearings, optics and actuators of laser beam deflection systems and have long been the province of the precision printer maker.

All this is causing the present band of conventional printer makers—dot matrix and daisy wheel in the main—to think again about prices.

For the user, the options are widening. Apart from the LED and ink jet types, which are likely to drop in price as volume builds, there are other technologies in the offing.



Hewlett-Packard's Think Jet printer



have no moving parts except for the drum. The LED array is manufactured in short length chips which are joined together to give a page-wide bar. The system lends itself well to mass production.

The later stages of the laser/LED technique have much in common with photocopying, which is why the Japanese, who have scooped the copier market, now seem set to do the same with low cost light-based print mechanisms.

Orin Electric, Ricoh, Canon and Sanyo, for example, offer systems while in Europe, Agfa is known to have developed a machine. A major printer announcement a few weeks ago came from Apple Computer. Called Laserwriter, it is based on the 300 dots per inch Canon mechanism, a built-in Apple microcomputer and some software called Postscript.

Both Epson and Casio have developed systems deploying liquid crystals. Use is made of the same kind of light shut-off effect as in electronic watches, except that switching between "light" and "dark" is some 200 times faster. After that, the drum/toner/sealing process is similar to LED systems.

Casio says the technology will allow pages of text or graphics to be produced at speeds three to eight times faster than those of dot matrix machines.

It is possible that 1985 will be the year in which, for new PC users, a major shift will occur from conventional impact printing to the new, quiet and reasonably priced systems able to cope equally well with text, data, or graphics.

It is a new era that conventional printer companies will have to master if they have not already done so. Not only there new hardware technologies to acquire; software control techniques that deal with the printing variability also has to be mastered.

Office integration could turn out to be more important than some printer makers think, say Butcher and Singer.

"Without integration," says the researcher, Nicholas Pagon, "the laser printer would be viewed simply as a new printer technology that depends on price/performance parity with the older technologies to succeed. But we believe strongly that integration is an important issue and one that brings new market demands."

For that reason alone, the more costly laser printers are likely to become competitive with established technologies.

Since the launch of the IBM Personal Computer a massive "add-on" industry has developed for specialist products to plug into the machine

Fresh challenges in disk memory market

ONE OF the important criteria upon which companies choose microcomputers is that of memory capacity. Clearly the bigger the memory, the greater the potential application for the equipment.

Microcomputer memories come in more than one variety. The computer needs a certain amount of memory just to carry out its calculations, according to the particular program which has been loaded into its working memory. This type of store is normally based on semiconductor circuits.

Without other forms of data storage, the result of each calculation would be lost each time the computer was switched off. To counter this, makers have resorted to magnetic types of storage. The most popular form of long-term storage is the floppy disk—for personal computers the 5 1/4 inch floppy disk predominates today. Information is stored magnetically on closely spaced tracks and read with a magnetic head, rather like the way that the stylus of an audio record runs over grooves. Shugart, in 1978, was

one of the first companies to introduce equipment based on these disks.

The market for floppy disks is a volatile one, with an increasing number of competitors. Companies such as Kodak, better known for its photographic products, have entered the field. Other major competitors include 3M, Verbatim and Wabash.

Early in March, Rhomule Systems, one of the world's leading computer media companies, which produces materials for magnetic storage, bought a major interest in Brown Disk, the floppy disk manufacturing subsidiary of Dyan Corporation in the U.S.

RPS is a leading manufacturer of computer tapes in Europe. Brown Disk, based in Colorado Springs, was set up only four years ago and has projected sales for this year of about \$4m.

RPS has risen quickly in its home market in France. It now has an estimated 30 per cent of the French market and hopes that the acquisition of the American company will give it

Variety of memory systems

ELAINE WILLIAMS

a strong foothold in the U.S. where Brown Disk is reckoned to have 60 per cent of the market for the new generation of high density floppy disks.

The agreement with Dyan—which is merging with Xerox, another U.S. corporation—also covers the purchase of another Dyan subsidiary, DYVP, a specialist European floppy and rigid disk-maker.

RPS is planning to double its annual production capacity for the next few years, in line with forecasts of an increase in the world computer consumables market of more than 400 per cent in the next three years.

Whether or not there is a slowing in personal computer sales, there will still be an increasing demand for disk memory. The 5 1/4 inch disks are being

challenged by under 4 inch versions for the compact, portable and small desktop machines. Sony, the developers of a 3 1/2 inch floppy disk which is protected in a rigid shell, claims that it has about 90 per cent of the market for under 4 inch disks. Sales are growing at a rate of about 50 per cent a year.

Sony, which introduced its disk about two years ago, hoped that its version would become the de facto standard against three proposed disk types from Maxell, IBM and Dyan. The advantage of such disks for portable and small personal computers is in their small size which have the ability to store as much information as the larger types.

Sony now dominates this embryonic but rapidly growing market. It says that it is winning 75 per cent of the new business for under 4 inch disks. Already Hewlett-Packard, Apple and ACT in the UK are committed to the Sony disk while three major, but so far unnamed, manufacturers are forecast to adopt the disk later this year for forthcoming portable busi-

ness computer systems.

Sony's disks are already capable of storing up to 1 megabyte of information and this could be doubled in the near future, says the company.

For less portable personal machines where greater information storage is needed, fixed or Winchester disks are being increasingly adopted. These memory systems are based on a thin layer of magnetic material, usually Ferri oxide, laid on a circular rotating disk.

A driver unit can contain more than one disk; information in the form of binary digits is stored on concentric tracks, recording onto the magnetic medium—just like floppy disks, each track is subdivided into a fixed number of sectors. These sectors are divided into tracks, recording onto the magnetic medium—just like floppy disks, each track is subdivided into a fixed number of sectors.

These systems automatically copy information stored on the hard disk.

No limit for the 'add-on' industry

'Bolt-on' devices

PHILIP MANCHESTER

ONE OF the major selling points of the IBM Personal Computer since it was first launched has been its open architecture. IBM has made the hardware specifications for the PC readily available to other suppliers—an unusual policy for a giant company with a reputation for closing off its computers to outsiders.

IBM broke with a number of precedents with the PC. For the first time in the history of the giant, it employed outside chip technology, rather than using its own, and it utilised existing industry software, rather than developing new packages and it published a manual giving the exact hardware specifications of the new machine.

As a result, a massive "add-on" industry grew alongside the IBM PC's relentless climb to the top of the best-seller lists.

It is now possible to buy add-ons to fulfill any number of different purposes from fast scientific processors to communications boards. Also, there are special purpose plug-in options to transform the IBM PC into a mouse driven Mackin-

rosh type machine, a voice controlled computer and even a remote terminal to a large mainframe computer.

There are basically two ways that these products can be connected to the PC. The first involves plugging a circuit board inside the machine in one of the vacant slots catered for in the original design. The second method is to plug the device into one of the sockets in the back—much the same way that one would attach a printer.

A key area is communications. A number of companies provide plug-in boards to enable the PC to communicate via modems to other computers and networked systems.

The so-called Irma board has been adopted by a number of software firms, for instance, to provide terminals emulations for well known mainframe communications terminals. This has enabled the PC to replace the traditionally expensive terminal as well as providing local computer power to users.

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separate (and very expensive) options. The above products just involve plugging a card into the PC, but there are other products that require a card and an external "box" of some kind.

Usually, "hard disk" drives and tape streamer backup devices fall into this category. The board is needed to control the device as additional programming is needed with most add-on devices.

Applications

The ATP 20 tape streamer, used for backing the high capacity hard disks, can be used with IBM PCs—the XT, the AT and with any of the three major PC itself—and comes with an appropriate interface card to suit the specific computer.

There are also some unusual additions to the PC. The UK company, Penman Products, has developed a robotic drawing implement. The Penman device can be laid on a piece of paper and instructed to draw designs or graphs by the PC. The Penman, also available for the BBC micro, costs between £200 and £300 and will no doubt find a market in specialist applications.

Despite all of this activity, there are serious doubts about



Since the launch of the IBM Personal Computer a massive "add-on" industry has developed for specialist products to plug into the machine

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Falling orders worry chip-makers

WHAT does the semiconductor industry have up its sleeve for personal computers? New microprocessors? New memory chips? New controller chips? New packaging?

All of the above, the chip-makers reply. Overwhelmingly, however, semiconductor companies are more concerned about the lack of personal computer orders for current products than they are about providing parts for the next generation of personal computers.

For semiconductor manufacturers, personal computers have been a mixed blessing. What looked like a golden opportunity two or three years ago has turned into a lead weight, dragging chip-makers' revenues down into a steep recession.

The explosive growth of the personal computer market gave chip-makers a major boost in 1983, when they were struggling to find orders. Personal computers lifted the semiconductor industry out of a two-year recession. Companies such as Intel and Advanced Micro Devices that make the microprocessors and peripheral chips, used in IBM and IBM-compatible computers, benefited greatly from surging demand for their products.

Major factor

In 1983-84, personal computer makers accounted for approximately 20 per cent of all semiconductor purchases. This new market for chips was a major factor in creating a record 50 per cent growth in the U.S. semiconductor market last year.

With their excess demands for certain types of products, PC-makers created shortages. Short-term, this had the effect of accelerating semiconductor order growth. Chip customers from other sectors of the electronics industry placed huge orders to ensure their supplies. Then the bubble burst. Per-

Semiconductor manufacturers

LOUISE KEMO

sonal computer sales growth slowed down. A number of personal computer companies failed. Others pulled out of the market. With them went the chip orders.

The impact upon semiconductor manufacturers has, however, spread far beyond the cancellations and order postponements of the personal computer industry. There has been a domino effect throughout the entire electronics industry. As systems manufacturers realise that chip shortages no longer exist, they, too, have cancelled orders. Inventories, stock-piled during the days of shortages, need not be replaced today.

Chip orders have spiralled downward at an alarming rate. As semiconductor makers count their losses, there is a growing appreciation in the industry that the personal computer — just like the video game and the digital watch — is susceptible to the fickle fancies of the consumer. The personal computer will not fade away like previous consumer electronics products, but until the market settles into a steady growth rate it will continue to disrupt semiconductor supplies, the chipmakers believe.

Novel man-machine interfaces include voice input and output devices.

Search goes on for new speech response systems

Interface devices

ELAINE WILLIAMS

DESPITE the computer industry's oft-quoted description of its products as "user-friendly," many first-time operators are deterred from applying personal machines by an unfamiliar computer keyboard.

Though computer education in schools will obviate the problem in the long-term as children are already conversant with the keyboard—unlike their parents—companies have realised that they must allow people to use computers without necessarily using the keyboard to input information.

The early solution to this problem was a hand-held input device, called the "mouse," such as is found on the Apple Lisa, and Macintosh and Xerox's Star computers. Microsoft was one of the first companies to develop the mouse concept. The input device is connected to the computer; its movements are copied by a cursor on the screen. This allows the user to move the cursor to all parts of the display, selecting options, or building up graphic pictures, for example. Normally, the user is presented with a set of options on one part of the screen.

For word processing applications, for instance, this could be commands such as delete, insert or move. The rest of the screen could be taken up by the text itself. By moving the cursor — by moving the mouse — to the command portion of the screen and then to the text, the user can edit or operate any of the keys on the main keyboard.

Graphics tablet

For more specialist applications, such as computer-aided design, a more complex version of the mouse is used in conjunction with a piece of equipment called the graphics tablet. In this case, instead of moving the mouse on an ordinary desk, it is moved on a pad called a tablet. Along the edge of the tablet are the commands and, as before, the mouse is moved between the command portion and the working space which is used to draw images on the screen.

Sometimes a light pen is used, instead of the mouse. Again, the user can either use a tablet or draw directly on to the screen with the lightpen.

Hewlett Packard's touch screen is another way of entering information without using extra equipment. With the touch screen, the user simply points at symbols on the screen which offer a number of options. The hub of such systems is good software which presents the sophisticated systems in a simple way.

The ability to communicate with a computer using human speech is considered to be the

hallmark of an intelligent system. The computer industry is not the only sector interested in speech recognition and synthesis. Such technical advances are of special interest to military equipment makers and to the automotive industries, for example.

Computer companies, such as IBM, Logic, Dragon Systems, International Computers, as well as Ferranti, Flessey and Smithall Industries are making substantial research efforts in software for speech devices.

In May last year, Texas Instruments, for example, built extra circuits into its personal computer which could respond to human speech. However, present systems are limited in the number of words which can be recognised by a computer. The human operator has to be prepared to "train" the computer to understand his or her voice.

Training

TV's system requires this training process though it has developed a technique to reduce the amount of data which would normally be required to reproduce a sound. It is called linear predictive coding and is a way of splitting up a sound, rather like the way that series of images are recorded on moving film. On playback, the sound appears to be continuous as the computer "guesses" the gaps.

When identifying a voice, a computer compares speech patterns against those recorded in the database. The computer can identify 50 words at a time but TI has extended the vocabulary by drawing up libraries of 50 words each.

Logica, in the UK, is trying to extend the range of speech recognition. It is using the Logos speech recognition software which the company hopes will lead to the use of more natural-sounding language interfaces and systems which can identify more than one voice.

In order to achieve wide use in commerce and industry, future speech-response computers will need a vocabulary of at least 10,000 words. Researchers do not anticipate any major breakthroughs with speech technology products this year, but, even so, the demand for systems is likely to increase.

There are occasions when a personal computer-user does not want to "converse" with the computer but wishes to enter information quickly into the machine's memory. Several companies have developed optical character recognition systems which can read ordinary text and convert it into the form of binary digits, suitable for computers.

Many of these systems are costly but at least one has been reduced to a price-level suitable for personal computer users. Oberon International has developed a £400 system called the Omni-Reader which enables typewritten or printed text to be transferred to a microcomputer, such as a Macintosh, at a speed of 25 characters a second.

In the current circumstances, it is hardly surprising that chip-makers are not enthusiastic about developing new products for the personal computer market.

To the question: what does the semiconductor industry have to offer PC-makers in the future? The answer is commonly a derisive snort. "Inventory," responded one of the largest U.S. chip-makers.

New chip product developments, begun during the sunshine days of the personal computer market boom, are however starting to reach the market. Several technology trends are emerging:

- A move toward customised chips for personal computers.
- Microprocessors that incorporate "peripheral" functions, such as memory management.
- Faster memory chips.
- Complementary metal oxide semiconductor (CMOS) devices.
- New packaging.

The move to custom chips for use in microprocessors is already apparent in such soon-to-be introduced personal computers as Commodore's Amiga which includes its own graphics controllers.

The trend toward standard operating systems, such as MSDOS and UNIX, brings with it a problem for personal computer manufacturers. How can they differentiate their products? The answer seems to be in the use of custom chips.

The semiconductor industry

has made custom chips economically viable for use in low-cost products through the development of "semi-custom" design methods such as the cell libraries now offered by several companies which allow the relatively quick and inexpensive design of custom chips.

Industry experts expect personal computer-makers to take full advantage of semi-custom chip design methods to create unique products.

Performance

The key element of a new generation of personal computers is, however, the microprocessor. At the moment, Intel's 8088 is the heart of the IBM PC and all of the "clones" of that machine. The Intel 286 is used in IBM's "PC AT". Texas Instruments and Kaypro are the first companies to offer compatible machines using the same microprocessor chip. Many others are expected to follow.

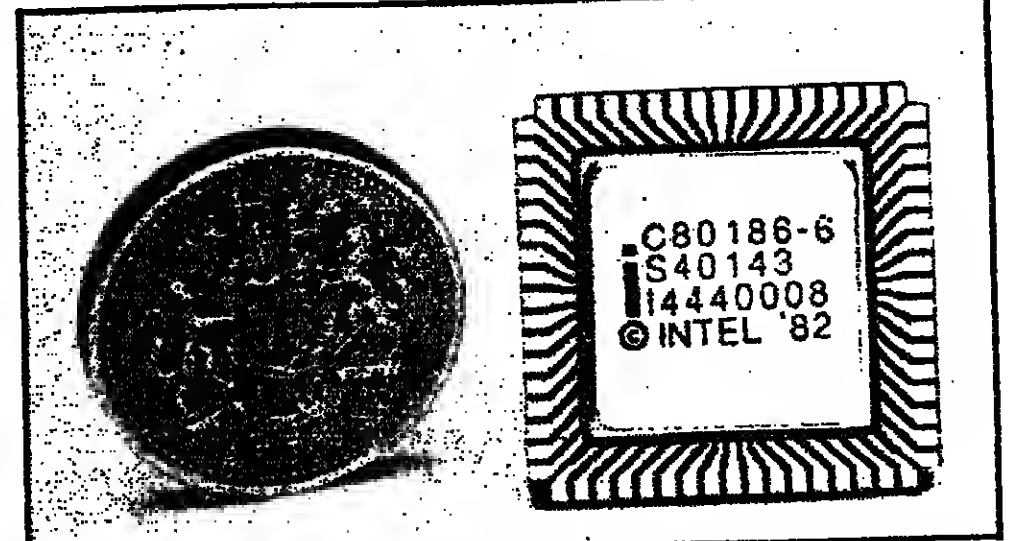
Toward the end of this year, Intel is expected to introduce the "386," a super high performance 32-bit microprocessor that can be expected to provide the brain-power to personal computers coming to market in 1987-88. The "386" has at least twice the speed and power of the current "286," but it remains fully compatible with today's products. The "386" will be built using CMOS technology so that it will use less power than today's microprocessors.

Other important Intel chips that are expected in the coming months include a product called the 80886 which is a highly integrated 16-bit microprocessor. Details are sketchy, but Intel's enthusiasm for CMOS would suggest that the 80886 will also be a low-power part. Functions generally performed by peripheral devices will be condensed onto a single chip.

Intel is also working on its own graphics co-processor to be called the 82786. This will be a device that will produce high-resolution graphics on personal computers and computers used in, for example, computer-aided design systems.

Meanwhile, Motorola has already announced a high performance full 32-bit processor called the 68020. The chip has been designed into some high performance microcomputers but is yet to reach the personal computer market. A drawback of the 68020 is that it is not fully compatible with earlier 68000 family processors.

Hitachi is, however, expected to address that issue by launching its own 32-bit 68000 compatible microprocessor soon. Faster microprocessors require a super-speedy memory chip to keep up with them. The semiconductor industry plans to oblige with a new generation of dynamic RAMs (rapid access memory systems)—the chips that store data in a personal computer until it is safely filed



The Intel 80186 microprocessor (shown next to a £1 coin) from Triumph Adler's new P50 microcomputer which is to be launched at Hannover. TA claims that the new model is the first European micro to use the Intel 80186 which makes it "two to three times faster than the IBM PC"

away on a disk. Dynamic RAMs used to come in one "vanilla flavour." Over the past two years, however, chip-designers have developed special versions of dynamic RAMs optimised for use with microprocessors.

These memory chips store "words" (strings of data bits) that are the same size as those read by microprocessors. The traditional array architecture of the dynamic RAM is being changed to suit the microprocessors.

Both memory and microprocessor chips are increasingly being made using low-power

CMOS (complementary metal oxide semiconductor) technology.

Chip-makers used to boast about how useful CMOS chips would be in portable computers. The low power requirements of the chips would mean longer battery life, they pointed out.

These days, they pointed out, computer market falling to materialise as a major segment of personal computers, less emphasis is placed on portability.

CMOS will, however, be the dominant semiconductor technology for the next several years and eventually, it can be

assumed, the personal computer market will be ready to take advantage of its low-power requirements.

Another aspect of chip technology that will be important for personal computer-makers is the trend toward "surface mounted devices." These are chips that can be bonded directly on to a circuit board. They take up less space and are more easily handled by automated equipment than traditionally packaged chips.

With surface-mounted chips, personal computers will become smaller, with higher memory capacity.

If you thought great achievements had stopped, take a look at the Fujitsu Micro 16s.

In 1969, Neil Armstrong was the first man on the moon. A great achievement for mankind. Yet great achievements didn't stop 16 years ago. Fujitsu's achievements in mainframes, telecons, chips and micros have made us Japan's number one computer company.

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The entry level business system comes complete with WordStar, SuperCalc 2, Personal Basic and GSK — and all at under £1950*. The FM16s — one of the great achievements from Fujitsu.

* Price as at April 1985.

Fujitsu Micro 16s

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Professional Personal Computers 10

Alan Cane explains why systems software options have become so important

The operating system dilemma

MOST of the excitement in personal computers today is about very recent developments—the launch by Motorola and Intel of the latest generation of microprocessor chips, for example, or the appearance of a new kind of display.

In the systems software world, however, the hottest topic is Unix, an operating system for minicomputers and microcomputers that is now almost 30 years old.

Developed by Kenneth Thompson and Dennis Ritchie at AT & T's Bell Laboratories it languished virtually unnoticed except by the computing cognoscenti until with the advent of today's very powerful machines (16 bits and more) it took on a new lease of life.

First, a word about operating systems: computers carry out tasks automatically because of sets of instructions (programs) stored in their memories which they obey in sequence, one after the other.

Specific tasks—running a spreadsheet, for example, or carrying out a complex calculation—are ordered by applications programs.

But computers are complex beasts with many component parts which have to be synchronised properly if they are to execute applications programs efficiently.

Decisions must be taken, for example, about how to allocate blocks of information to specific areas of memory. There has to be some way of deciding how to use the computer's disk memory and how to feed information to printers or other peripherals.

Decisions

The operating system takes responsibility for these decisions, allocating the resources of the computer in the best possible way. Operating systems are large and complex programs and they are important for two principal reasons.

● First, an applications program will only run as effectively as it is allowed to by the operating system, so there is a continual search for operating systems which use the resources of the computer to their best ability.

● Second, an operating system can be a powerful force for standardisation and therefore progress.

Early personal computers were really only of interest to the enthusiast until a young Intel engineer, Gary Kildall, developed an operating system, CP/M, which made it possible for these eight-bit machines to

A new lease of life for Unix

support disks and therefore business software.

Mr Kildall left Intel to form his own systems software company Digital Research. CP/M became the dominant operating system for the eight-bit personal computers and thousands of business programs were written for CP/M machines.

Software authors had the confidence to write applications programs to run under CP/M because they knew that their work would be available on a wide range of machines.

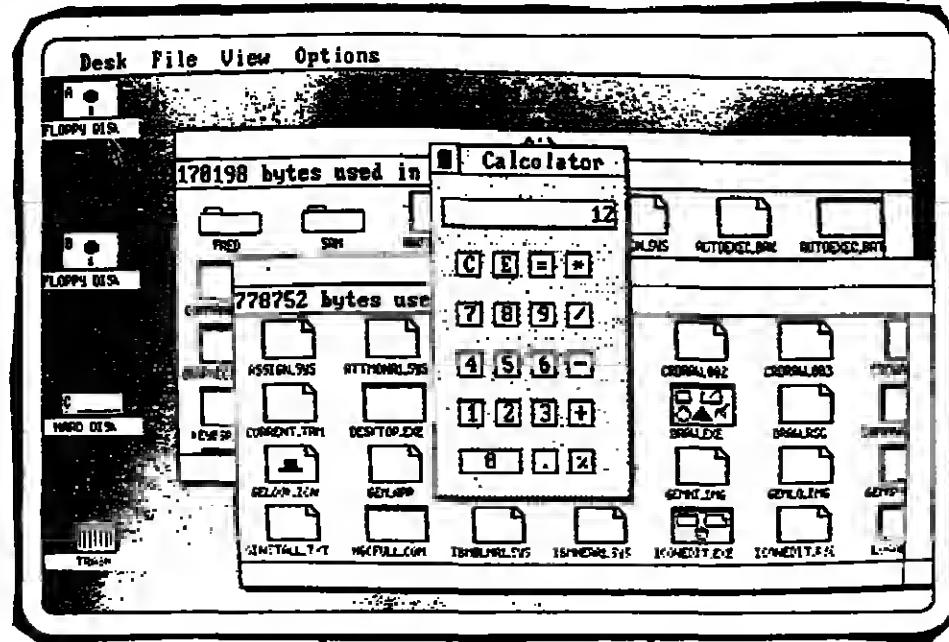
IBM introduced its Personal Computer in 1981 with a new operating system, PC/DOS written by Microsoft. PC/DOS was a version of Microsoft's own MS/DOS product, tailored for the IBM PC. It was designed to exploit the power of the Intel 8088 microprocessor chip which IBM used in its original PC, a chip which was half way between an eight-bit processor and a true 16-bit processor.

The IBM PC quickly became the industry standard and thousands of application programs were written for PC/DOS and MS/DOS.

At the same time, Digital Research had developed a 16-bit version of CP/M, CP/M 86, and an operating system which allowed the computer to carry out up to four tasks simultaneously—one task does not have to be completed before the next starts, which means that a user could be running a spreadsheet package while the printer was listing the output of a quite separate program.

The emergence of a new and significantly more powerful breed of chips, the Motorola 68000, the Intel 8086 and 80286, Zilog Z8000, National Semiconductor 3200 and Western Electric WE32000, changed the picture significantly.

There was a dearth of operating systems which could make the best use of the power of these chips not only for multi-tasking, but for networking.



The calculator (above) by Digital Research is an example of GEM Desktop software

Most industry observers agree that while there is little future in operating a number of terminals from a single microcomputer—(multiple access computing)—the importance of networking one microcomputer to another cannot be over-emphasised.

Mr William Gates, chairman of Microsoft, says, "Before networks, the machines sat in isolation and that is a problem inside the company because everybody is working off different sets of data."

"That can lead to chaos, because the personal computer is in a sense an accelerator. It allows you to move faster and unless you move faster in a very careful fashion, you can achieve a great deal of confusion."

Standard

Microsoft has developed an extension of MS/DOS for networking, Digital Research has a new operating system called Concurrent DOS/286 which supports multi-tasking and networking and is able to run any application written for PC/DOS.

But as a new report from the UK systems house, Digitus, makes clear, Unix, with all these capabilities and more, seems to be for computers what VHS has become for video re-

corders—the worldwide standard.

Many companies are attracted to Unix as much for the fact that it represents a potential standard over which IBM has no control.

The Digitus study says that Unix is now "off the ground and rising quickly" because of:

1—AT & T's direct entry into the personal computer market and its commitment to support Unix and Unix optimised hardware.

2—Olivetti's commercial links with AT & T in the U.S. and Europe.

3—Statements of direction supporting Unix from IBM.

4—The formation of a European club of established manufacturers—ICL, Nixdorf, Philips, Siemens, Bull and Olivetti—to support Unix, to attract Unix-based software and to sell Unix systems.

5—The adoption of Unix by every major independent semiconductor manufacturer for both their 16 bit and 32 bit offerings.

6—The fact that over £100m has already been invested and that investment is rising in creating software that runs under Unix.

7—The substantial numbers of graduates from computer science departments who are already trained in Unix.

In January this year, Micro-

soft and AT & T announced plans to form a joint venture to develop a common standard and other suppliers are beginning to follow it.

Some argue that Unix, good as it is, hardly warrants this treatment but Digitus disagrees. Its report says: "There is no such thing as 'best'; there is only 'most suited' for the purpose from the selection available."

In this regard, Unix can be compared on one scale to MS/DOS as the operating system in the right place at the right time backed by the major computer, communications, semiconductor and software companies.

On another scale, it can be compared to a minicomputer operating system like DEC's RSTS which it has already out-

performed in the UK.

Source: Frost and Sullivan, 1985.

Market Values by Products

A summary of market shipments forecast for personal computers in the corporate environment, 1984 to 1989, value by product type. These values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Product type	1984	1985	1986	1987	1988	1989	1985-89
STAND ALONE							
Hardware	453.39	570.15	639.35	851.95	618.25	583.71	3,063.41
Software	146.26	278.29	479.32	699.89	770.26	827.78	3,095.74
Total value	599.65	848.44	1,118.67	1,551.84	1,388.51	1,411.49	8,119.15
NETWORKED							
Hardware	41.48	94.56	316.80	923.24	1,701.00	2,730.03	5,765.75
Software	8.53	32.18	168.29	596.96	1,239.38	2,520.90	4,616.52
Total value	50.01	126.74	485.09	1,519.40	3,000.38	5,250.93	10,382.27
PORTABLE							
Hardware	82.52	152.65	278.52	361.23	497.10	634.91	1,924.41
Software	34.50	92.80	221.55	374.85	617.56	897.29	2,204.05
Total value	117.02	245.45	500.07	736.11	1,114.66	1,532.20	4,128.49
ALL TYPES							
Hardware	577.39	817.36	1,234.67	1,936.32	2,816.35	3,948.65	10,753.57
Software	189.29	403.27	870.27	1,670.83	2,687.20	4,945.07	9,876.54
Grand totals	766.68	1,220.65	2,104.94	3,607.15	5,503.55	8,893.72	20,630.21

Source: Frost and Sullivan, 1985.

Expert help made all the difference

Computer selection a case study

YOU DON'T have to be an expert to choose the right computer for your business, though expert help can make all the difference.

That is the experience of Dr Gordon Hendry, managing director of two-year-old Glasgow business supplies distributor, Hospital Management and Supplies.

Dr Hendry, a former consultant anaesthetist at the city's Victoria Infirmary teaching hospital, started his own business when his falling eyesight made a continued medical career out of the question.

Starting life with the backing of an enlightened local building company, HM&S bought a general accounting package run on a Sirius 16 micro, guided by the informal advice of Hendry's former colleagues.

"We simply asked for a package and installed it. That proved to be a bad move," he reflects.

Initially, the system was well able to handle HM&S's needs, which included invoicing, producing advice and delivery notes, stock control and sales reports. But within a year, the number of products distributed by the company and its 19 employees had doubled to 4,000 and the system was getting overloaded.

"It could no longer support the volume of data or the processing required. We needed something that could be updated as the business expands," says Dr Hendry, echoing a point

which all too many first-time computer buyers overlook.

HM&S was lucky in that its parent company already had access to advice through its auditors, Arthur Young. With the help of the firm's Micro-centre computer advisory service, HM&S was able to compile a list of functions that the new computer would have to perform—a far more structured approach than it took when buying its first system.

Sales analysis

The company needed access to regular analyses of sales—£700,000 in the year to March, 1984—broken down by each of its 65 suppliers. The system had to be able to store and update at least two prices for each item: one for National Health Service bulk orders sold at a discount, and a higher price for private sector deliveries. There also had to be running checks on the state of each individual order and separate stock levels, which could be called up on a screen without interrupting tasks being performed at other workstations.

The list formed the basis of a tender document sent to seven local computer companies selected by the Micro-centre. Optim, a U.S.-owned computer maker, provided a £26,000 mini with four screens and two printers. The price included £6,000 for a software package and £1,200 for staff training.

The system was installed at the turn of this year, but is not yet fully running because HM&S is taking the elementary precaution of computerising in easy-to-manage stages.

However, its effects are beginning to show.

"We have speeded up the flow of products through our warehouses and the system is enabling us to chase up invoices more quickly," says Hendry. Moreover, the mini contains enough spare memory capacity to avoid the need to change machines again for the next few years.

Hendry's experience illustrates some of the most common pitfalls that lie in wait for small business computer buyers.

Andrew Swann, manager of Arthur Young's Micro-centre, says: "A lot of people mistakenly think you can just go out, buy some hardware and a software package, press a button and your problems are solved."

Swann strongly recommends that first-time business computer buyers should get consultancy advice before they embark on a purchase. Such advice is expensive—a basic four-day programme with Arthur Young costs £800 and consultancy fees generally vary from £40 to £100 per hour—but the consequences of making the wrong choice can be even more costly.

Trade surveys suggests that £60m a year is wasted on the purchase of useless equipment and it is not hard to find examples of small companies that went bankrupt at least partly because they bought a system which they failed to understand or which proved unsuitable for their specific needs.

"The risk is that they buy some cheap and nasty system which destroys all the data they have created for it," says Alan Wood, managing director of Digitus, one of the larger

London computer dealers. "We see the view that the customer does not always know best."

Consultants

Many small businesses find consultancy fees hard to justify since the benefits are hard to measure. Mr Doug Eyleons, secretary general of the Computing Services Association, says: "The first-time user generally does not understand why he needs to pay for someone to make his decisions for him, especially when he thinks he can get it free from computer magazines or from talking to salesmen."

One common observation among computer consultants is that many first-time buyers have a habit of thinking backwards in the sense that, if left to their own devices, they would choose the hardware before the software. The kind of machine you will need will be entirely dictated by the functions it is going to perform. Those are in turn dictated by the software, the set of instructions which tell a computer what tasks it must do. In any case, there is little technical difference between the hundred microcomputers on the market.

"It doesn't really matter what the name tag is on the front so long as it's well supported and the company that makes it doesn't go bust in the next few years," points out Mr Eric Bagnshaw, senior consultant with the National Computing Centre's microsystems division.

Another common observation is that a number of small businesses wrongly see micro as a way of solving management

problems. Mr Clive Leyland, principal in charge of accountants Arthur Andersen's Micro-guide advisory service, says: "Many people approach us because they have lost operational control of their business and see a micro as a relatively cheap way of getting it back."

A micro will do no more than automate the information already available—and if a manager has already lost control of his information, a computer will only hasten that company's decline. Says Mr Leyland: "The financial implications of that process, while unquantified, can be enormous."

WILLIAM DAWKINS

The top six suppliers

EUROPE saw an 85 per cent rise in sales of office automation systems in 1984, totalling £2bn worth of equipment, according to a recent survey by Wharton Information Systems.

Sales of personal computers for the office reached the £1,000m mark with a 74 per cent increase on 1983's figure. The top six suppliers of office personal computers, accounting for 74 per cent of the market, were:

IBM	23
Apple	13
Triumph Adler	12
ACT	10
DEC	10
Olivetti	8

* Wharton Information Systems, 12, Eton Street, Richmond, Surrey TW9 1EE (telephone 01-940 7366).



The AT & T UNIX PC (left): easy to use with menu-and-window displays to guide the user and an electronic "mouse" that can often be used instead of the keyboard. Right: the Sirius 1 personal computer from ACT, UK

Case study: how a personal computer software package has proved to be a valuable aid in industrial production and sales forecasting

More information at virtually no cost

FINE MALT whisky takes a long time maturing before it can be drunk, and many a perceptive drinker will bless the years it spends in the cask. But planning supplies 10 or 12 years ahead can be quite a headache for Mr George Jenkins, financial director of William Grant and Sons, which produces the well-known Glenfiddich malt whisky.

"We are distilling today for bottling and sales in 1996—after I have retired," says Mr Jenkins.

Forecasting future sales and planning production and stocks around the forecasts seems rather like necromancy when you are trying to look that far ahead, and Mr Jenkins says that over-optimism bias, in the past, has been confounded by recession for the whisky industry. But for a family-owned company like Grant, cash flow must be tightly controlled, so Mr Jenkins has introduced a three-year plan.

The plan had at first to be prepared manually, but it could take months just to gather all the figures from different departments. Although Grant already had an IBM 4300 mainframe to handle accounting and export marketing functions, this was not felt to be flexible enough for the three-year plan. In 1983 the task was handed

over to a computer service bureau.

There was trouble from the start. "We were the smallest company using the system, but we had the largest model," recalls Mr Jenkins. Above all, the process of working with a remote bureau was cumbersome and expensive.

Ingredients

The solution was MSA's PC Software, used with an IBM PC. The £4,500 package includes graphics, word-processing, mailing list and telecommunications functions. But from Grant's point of view, the main ingredients were a link to the mainframe computer called ExpertLink and the MSA PC Spreadsheet.

The system allows Mr Jenkins to draw information quickly and simply from the main computer and insert it into his model—a matrix of 250 rows by 40 columns, with sub-models representing the separate business areas.

He can break down costs, sales and profits for each of Grant's distilleries or for different market areas, as well as predict the effect that various

decisions would have on his cash flow and profits. This helps him keep much tighter control of borrowing.

Mr Terry Gorman, Grant's data processing manager, says that the planning model alone would have justified the cost of the personal computer and the MSA PC Software. In fact, they have been used for much more, and the company now has two PCs at its Paisley headquarters, one at its Girvan depot and one at its London sales office.

Indeed, the PC is now used in one of Grant's production systems—using the PC as a link proved the simplest way of converting data from the microprocessor running production at one of the distilleries into a form that the head office mainframe computer can handle.

Acceptance

Mr Gorman sees the ability to load information directly from the main computer as crucial in winning acceptance of the PC within the company—"If people have to key data into the PC, they won't use it," he says. Instead, managers are "queuing up from the crack of dawn" to run their programs on the PC.

William Grant first moved into the personal computer field with the expectation "only of breaking even"—our manual procedures had always been very good," says Mr Jenkins, "but I could see that we were going to fall behind our competitors if we did not get our feet wet."

Now, he finds that the PC has given him much greater access to information at virtually no cost. Using the planning model, Mr Jenkins can watch not only his own company borrowing more closely and spot early danger signs, he also believes it gives him "more of a gut feel for the market" and helps him to identify trends in the whole whisky industry.

GEORGE GRAHAM

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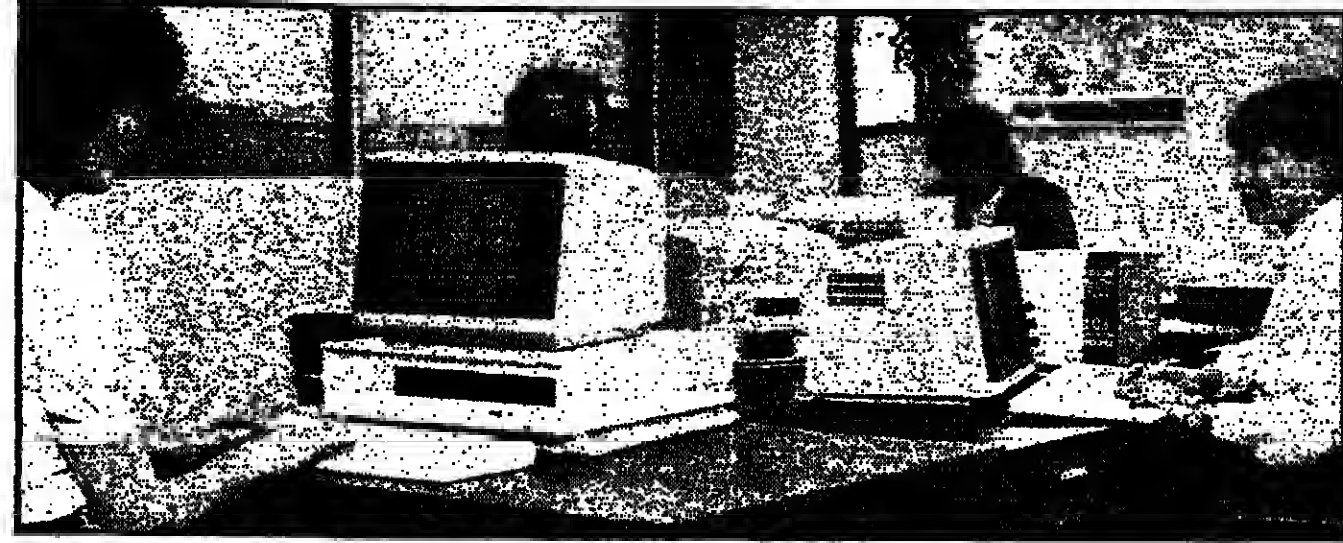
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Professional Personal Computers 11



European market forecasts

A summary of European market shipments forecast for personal computers in the corporate environment, 1984 to 1989, units by product type. Units are expressed in Thousands.

Product type	1984	1985	1986	1987	1988	1989	1985-89
Stand alone	97.90	135.75	168.25	191.75	202.70	212.25	910.70
Networked	7.75	19.50	22.00	22.75	47.25	84.00	187.75
Portable	30.00	61.05	126.50	195.25	391.25	423.25	1,017.40
Total units (thousands)	135.25	216.30	356.55	410.75	641.20	719.50	2,655.85

Source: Frost and Sullivan, 1985.

There is a growing need to make micros more usable and accessible to office staff with little or no computer training, as the number of micros increases by well over 30 per cent a year. Above: an office network of LSI Octopus computers

Major shift of power

Networking systems

PHILIP MANCHESTER

JOHN MCINTYRE, the man who launched IBM's personal computer in the UK, commented at a recent conference that more microcomputer "power" will be sold this year in the U.S. than mainframe computer power.

"By 1987 the installed base of microcomputer power will exceed that of mainframes," he added.

In simple terms this means that more of the computing done in the U.S. will be done using personal computers than on the larger, more established mainframe computers. Europe and the rest of the world will be close behind.

This enormous and unprecedented shift of computer power from the realm of the expert to that of the so-called end-user will not be without its problems. Paul Bailey of the software specialist company, Digital Research, highlights two major problems as a result of this movement.

"With the number of micros growing at between 30 per cent and 40 per cent a year there are two major developments that we must stay on top of: usability and networking," Mr. Bailey explained.

By usability, he means making the micro accessible to people with little or no computer training—a good example would be the typical office worker who has been earmarked as a prime target for personal computing. But just making a computer easier to use is not going to be enough: offices are centres of team work and so, instead of personal computers, it is only limited use in such an environment.

This is where networking comes into the picture.

The concept of the network has been around for some years and pre-dates the personal computer by as much as a decade. But the cheapness and availability of personal computers has given added impetus to networking.

Furthermore, it has exposed an inherent lack of standardisation in the computer industry. In essence, networking means plugging computers together so that they can talk to each other, as well as sharing resources.

A classic application of a network in office automation would be where a number of personal computer users wanted to make use of an expensive high quality printer or a large capacity disc drive.

As individual users of personal computing, the cost of such devices could not be justified. But if they can all share them through a network, it can become feasible.

The lack of a standard method of attaching personal computers and the expensive shared devices to a network has proven to be a difficult obstacle to overcome, however. This is an inheritance from the traditional data processing industry where manufacturers were keen to lock customers into buying only their equipment. Even now, it is much easier—though perhaps less desirable—for a customer to stick to a single equipment and software supplier.

At the beginning of the 1980s the International Standards Organisation (ISO) attempted to establish some sort of order by setting out a comprehensive structure for networking standards.

Known as the Open System Interconnection (OSI) standard, it laid down a series of layers which specify standards for connecting everything from telephone systems to personal computers.

Standards

Many manufacturers have adopted the standards as they have become available. But the major supplier, IBM, has avoided commitment to the OSI standard.

"Standards are still very fragmented as no one has agreed quite what they are going to be," says Mr. Bailey. "IBM has further confused things by not making up its mind," he adds.

David Fraser, UK managing director of the software company, Microsoft, suggests that IBM has tried to do too much in networking rather than starting simple and building up to more complex networks later.

"My personal feeling is that it has taken too big a bite of the apple and is having a hard time coming to terms with networking for personal computer users," he says.

So far, IBM has made only statements of direction about networking and released a bare minimum of products for networking personal computers. Part of the problem is that IBM has had a grand scheme for networking for ten years—the so-called System Network Architecture, SNA. The concept embraces all of IBM's products from its largest mainframes to its smallest micros.

Geared mainly to the needs of its large corporate customers, SNA was originally conceived as a network with a very strong element of central control. At that time there were no personal computers so it is no great surprise that they and their communications needs were not included in the original SNA design.

SNA has, of course, changed considerably to accommodate technological advances since the 1970s—especially the developments in personal computers. But the idea of central control still lingers on and this does sit easily alongside the current trend to get personal computers to talk to each other.

The lack of an accepted networking standard has so concerned UK manufacturers of microcomputers that they have recently taken their own initiative in a crucial area of personal computer networking—local area networks.

Last month the UK industry body, the British Microcomputer Manufacturers' Group (BMMG), together with the Department of Trade and Industry, announced a phased introduction of standards for connecting personal computers.

The initial software standard will be based on Digital Research's networking product

CP-NET though later the full OSI standard will be adopted paving the way for other operating systems and networking software to be included.

The group includes a number of British companies—ICL, Logica and British Telecom among them—but the notable absence of IBM from such an initiative casts doubt on its long term viability.

Even when the problems of connection have been overcome, the application of networking will still have a long way to go. Both Mr. Bailey from Digital Research and Mr. Fraser from Microsoft see significant administration problems in controlling networked personal computing.

Problems

"If you believe the unit growth rates, the number of installed micros by the end of this decade will have increased tenfold. Companies are going to be a kind of decision making anarchy if there is no reference data controlled by some responsible party," comments Mr. Bailey.

"You can't immediately change the way people work in an office, so there will be a lot of teething problems," he adds.

Mr. Fraser is even more forthright: "Networking really brings home the problems of organisation. If you have a number of people sharing resources, it is going to be crucial that someone is able to understand what is going on—and that means some sort of data processing expert," he says.

So, while networking technology is going to provide a means of bringing together separated personal computer users and give them a novel way of communicating, it is not going to remove many of the obstacles to creating the long-awaited "office of the future."

Hardware and software markets

A summary of Market shipments forecast for personal computers in the corporate environment, 1984 to 1989, hardware and software values.

The following values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Product type	1984	1985	1986	1987	1988	1989	1985-89
HARDWARE							
Stand alone	453.29	570.15	639.35	651.95	618.25	583.71	3,063.41
Networked	41.48	94.58	116.50	123.34	1,701.00	2,730.03	5,765.75
Portable	82.32	152.65	278.52	361.22	497.10	634.91	1,924.41
Total hardware value	577.10	817.38	1,034.37	1,036.52	2,816.35	3,948.65	10,753.57
SOFTWARE							
System support	30.09	57.81	131.88	255.20	495.71	808.02	1,778.62
System support	59.69	124.03	274.75	534.08	937.03	1,643.49	2,522.38
Applications	99.51	211.43	463.64	851.55	1,254.46	1,793.56	4,574.64
Total software value	189.29	403.27	870.27	1,640.83	2,687.20	4,245.07	9,876.84
Grand total value	766.39	1,220.65	1,904.64	3,677.35	5,503.55	8,193.72	20,630.41

Source: Frost and Sullivan, 1985.

CASE STUDY: SOLUTIONS IN MULTI-CURRENCY ACCOUNTING

International accounting made easier

ACCOUNTANTS are one group of professionals which has seized the opportunities offered by the microcomputer as a management tool.

In the small business they are widely used for accounting, and in the multinational, for financial planning.

Advances in technology have led to the more powerful microcomputers becoming a viable option to the low-end minicomputer. Accounting software for microcomputers is also far cheaper: a mainframe package can cost £30,000 or more, but a complete microcomputer-based package may well be only a third of the cost of mainframe software.

As a result of the increasing sophistication of accounting software, the accountant in the multinational company now has a relatively cheap, flexible method of achieving results previously available only from a minicomputer or mainframe.

There are now at least 800 different accounting packages available for microcomputers. These packages range from sales ledger systems to payroll, invoicing, and nominal ledger systems and nominal (or

general) ledger systems. Other products include spreadsheet financial planning packages, sales analysis and stock control systems.

Each business sector tends to generate its own software packages—for example, there are more than 40 packages alone for the legal profession for time-recording and so on.

Some accounting systems are highly specialised: for example, multi-currency accounting systems, of which there are probably less than a dozen on the market so far.

Among the producers of such specialised currency packages are Omicron Computing Software, Tetra Business Systems, Sapphire Systems and Dillon Technology International.

One product, the Lyric Business Systems, which offers multi-currency reporting and analysis facilities, is useful to the accountant who needs to look at alternatives in international dealings—perhaps because the company is part of a multinational group or an import and export company. In addition, the translation

to an overseas parent's currency, under either SSAP 20 or FASB 52 standards, can make period reporting much more simple.

The system consists of sales, purchase and nominal ledgers, as well as stock control, sales order processing and sales invoicing and analysis modules.

Four offices

One international semiconductor corporation for example, is involved in all aspects of the business, from manufacturing to service and installed base. It has four offices in Europe.

These offices need to meet tight deadlines imposed by the U.S. parent company which demands that European financial reports are ready on the same day as its own figures. This work has to be done by comparatively few accounting staff.

Locally, the four offices maintain accounts in the currency and format applicable to each country. Although each office is within the EEC, each subsidiary has to comply with different reporting practices. There is no common European reporting

standard, despite attempts for harmonisation, such as the 1981 Companies Act.

Each office maintains accounts in the local currency for management and statutory reporting. In addition, the system automatically creates accounts in dollars for consolidation into a common format acceptable to the U.S. parent company. In this case, currency conversion is carried out under the FASB 52 standard, since the parent company is in the U.S.

The four European offices also need to calculate their exposure due to fluctuations in the exchange rates. These can be handled by informed dealing on the currency markets—which is why Lyric has a "memo" currency facility to give timely information.

Dillon Technology of Maidenhead, Berkshire, which distributes the system, claims that its accounting system, implemented on 16-bit microcomputers, with a hard disk, is five times cheaper than a low-cost minicomputer system, but is capable of giving the professional PC user comparable results.

MICHAEL WILTSHIRE

No simple solutions

IT IS estimated that by the end of the decade one-in-three white collar workers in Britain will be using a personal computer. In st-ict numbers that means around 4m of these machines sitting on people's desks, according to a recent forecast by the International Data Corporation.

In many cases personal computers will be installed in companies that have already made significant investments in larger scale data processing or mainframe computing—a situation which poses a problem.

How can personal computer users link up to corporate information resources and make use of them? The answer, in the past, has been to provide workers with terminals attached to the company mainframe computer. But with the option of the personal computer now available, terminals are not just a less convenient answer—they are a much more expensive one.

The latest technological fix is to connect personal computers directly to the company mainframe and provide software that allows them to "pretend" to be terminals. It sounds simple. With the computing power being built into modern personal computers, getting them to afford like relatively simple terminals (often referred to as "dumb" terminals) would seem straightforward.

But it is not. There is a basic clash of cultures between personal computers and mainframe data processing. The former emphasises ease-of-use for people who are not at all interested in the technology of computing. The latter emphasises efficient use of the technology.

"When you talk about putting computing on senior management's desks, usability is not a mere luxury—it is a major requirement," explains Mr. Jeff Roberts of IMI Computing.

"When you are selling large numbers of units you cannot afford large-scale support, because of the low cost of the product. But with mainframe products which might well be addressing the same function, usability is not at the top of the list."

Mr. Roberts' company, a subsidiary of the IMI Group, has attempted to reconcile these two cultures with a linking package called Host Interface Manager (HIM).

"We asked ourselves whether there was a way that we could present a common system image to the personal computer-user of what was on the mainframe," adds Mr. Roberts.

In effect, HIM hides the complexities of the mainframe software from the personal computer user by sitting between the two.

Micro-mainframe linking

PHILIP MANCHESTER

Behind what appears to be the user as a series of menus are the usual components of what has come to be known as a micro-mainframe link. These comprise a piece of software to pretend to be one of the common terminals known as an emulator, a package to handle the visual display screen itself and a controlling program to keep it all together.

Often the term micro-mainframe link is applied to all or any of these components and this has led to some confusion in the market place.

Advantages

Such products are offered by Cincom and Cullinet, but unlike the HIM product they are specific to the companies' own products. This can have advantages. Package Programs, for instance, offers a proprietary link (Smartlink) to connect to a mainframe general ledger package which it also sells.

"It is faster to have a customised link, but then it is not as flexible as something like HIM," says Mr. John Dyson, new software manager at PFI.

"We also sell HIM for general purpose applications so that we can present data to a personal computer package like Lotus 1-2-3."

The U.S. software company, Management Science of America (MSA) started out by offering a dedicated link that only functioned with its packages but has recently opened it out to allow other companies products to connect to it.

"In the early days we did not want to let our competitors use



Files can be downloaded from a mainframe to a micro for local processing

our technology," explained Mr. Stuart Walsh, managing director of MSA in Britain.

"But there are no practical limitations to what a micro-mainframe link can address. Users want to be able to interface any number of different products together," he says.

Mr. Ian Durrell, European general manager of Informatics, concurs with this view and suggests that some software companies that sell dedicated links are trapping their customers.

"They are trying to leverage customers into their own products. Even though they are forced to provide hooks to other products, they are trying to influence the user's strategic thinking," he suggests. "We adopt a more open approach at both ends so we can link virtually any personal computer software to any mainframe software."

Informatics does in fact limit its offering to certain products ("for pragmatic marketing reasons") but Mr. Durrell adds that almost any company could build the appropriate software to incorporate its linking software.

He also points to some interesting trends in the area of software development itself. "We see micro-mainframe linking technology becoming wider to include the program as a user, leading to a pro-

grammer workbench," he says. The computer industry has been slow to make use of its own technology to improve its own productivity. Other companies have caught on to the value of taking software development away from the expensive mainframe to the micro.

The UK company, Microfocus, has developed a Cobol programmer's workbench to do this and so has the giant French software company, CAP Gemini Soged.

Demand

According to a survey conducted recently by Peterborough Software, around half of the large computer users in the UK already have micro-mainframe links in place and a third are using personal computers for updating mainframe databases.

"It is clear that a growing number of companies are looking for communications between their micros and their mainframes and we are seeing managers wanting to access information normally restricted to the DP department," notes Mr. David Laking, joint managing director of Peterborough Software.

"It is the 'glue' that brings together all sorts of products from different studios," comments Mr. Roberts from IMI.

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Professional Personal Computers 12

Opening up new horizons

COMPANIES around the world are gingerly getting to grips with novel types of computer software — expert systems — that aim to encapsulate human knowledge in a form that can be made available to relatively untrained people.

Research into expert systems, which started in the U.S. academic institutes in the 1970s, was driven by two factors.

- First, scientists wanted to increase the ease with which information can be fed into and extracted from computers.
- Second, researchers felt there could be a commercial need for data bases containing expert knowledge that can be easily tapped by ordinary people.

The expert systems produced by centres such as Stanford University in California and the University of Pittsburgh, contain hundreds, if not thousands, of rules in subjects such as oil-field prospecting and medical diagnosis.

The rules—of the general form "if factor X applies, then there is a Y per cent chance that condition Z is true"—are inserted into a computer by a specialist in a particular area using a special programming language.

Thanks to the way that the software is structured, a relatively unskilled person can then interrogate the computer to obtain insights into the specialist knowledge contained in the machine.

Guidance

Rather than give the person specific answers to questions, the computer would guide him or her to conclusions, perhaps asking questions to obtain further information about a particular area.

In the past couple of years, the pace of development in expert systems has quickened. This is both as a result of new work in software techniques—funded in some cases by national programmes such as Britain's Alvey project or the Japanese Government's work in fifth-generation computing—and of success in adapting expert systems to run on small, cheap microcomputers as opposed to big and expensive mainframes.

In the business world, expert systems could in theory have a host of applications. For instance, the knowledge of a highly trained process engineer could be put into a computer for use either in training or for operational applications in the control of a chemical or oil plant.

Planners and office managers could consult expert systems for advice on matters such as legal

Increase in expert systems

PETER MARSH

affairs in much the same way that they now read specialist books or talk to colleagues.

A few (mainly small) companies are either selling expert systems or advising large organisations on how to set them up. Those big companies that have become interested in the techniques are largely in the experimental stage and are stopping short of implementing expert systems in a routine fashion either in factories or in offices.

Opinions vary as to the future potential for the systems. Mr Chris Mobbs, a manager at Hoechst, the computer consultants, says that for many companies expert systems are difficult to justify on grounds of cost and the time taken to make them useful.

Although Mr Mobbs can see the attraction of having expert knowledge "on tap" at a touch of a computer keyboard, he says that many companies underestimate the amount of time taken in feeding expert knowledge into the computer in the first place.

This step may take many weeks or even months, tying up the time of a highly-paid employee who he could be working in areas of more direct benefit to his company.

Dr John Taylor, head of the information systems laboratory at Hewlett Packard's new research centre in Bristol, has a

more bullish view.

He says: "Researchers still have to crack some technical problems over expert systems, for example to make them operate in real time (to give instant answers to questions) and to make them capable of handling very large amounts of data."

"But their long-term potential will be tremendous. In future, using the services of a professional who doesn't use an expert system to advise him will be like going to a dentist who doesn't use an anaesthetic."

DEC, the big U.S. computer company, is probably further ahead than any commercial organisation in using expert systems. With researchers from Carnegie Mellon University in Pittsburgh, it developed a system called XCON (formerly called RI) to help in the construction of VAX computers.

With the system, workers in a factory can gain advice on how to fit components such as electrical devices inside a computer to suit the needs of a specific customer. The system also gives them a check list to make sure all the manufacturing tasks have been completed.

DEC is developing further types of expert systems to help in tasks such as management and other manufacturing jobs. There have been other pointers as to the future use of expert systems.

● Elf, the French company, is investigating expert systems for jobs such as maintenance of oil platforms. In theory, computers could receive data routinely from sensors on the platform and process the information using expert systems to warn of faults.

● Britoil, another oil company, is interested in expert systems as a tool to help in the deciphering of complex geographical data, for example from seismographs. It is working in this with Oilfield Expert Systems, a small company based in Burgess Hill, Sussex.

● Racal is investigating the techniques as an aid in the understanding of masses of coded signals, derived for instance from radar or other military equipment. The Ministry of Defence's Admiralty Research Establishment in Portsmouth, as well as research centres run by the U.S. Department of Defense, is also interested in this application of expert systems.

● Unilever is working on expert systems in its research laboratories for applications in process plants. They could help in the diagnosis of faults in, say, factories that turn out washing powder. In such plants, small discrepancies in, for instance, the amount of chemical fed through a valve may disrupt the whole process though the exact nature of the fault may be difficult to spot.

● Researchers at St Thomas's medical school in London are working on an expert system that could help doctors to control diseases such as diabetes. The system would contain hundreds of rules related to the disease, for example linking symptoms with specific guidelines on treatment. According to the researchers, the system could be used by general practitioners with no special knowledge of diabetes to advise patients suffering from the condition.

● Wolverhampton metropolitan council is attempting to use an expert system to advise junior staff on how to allocate people for council houses. The system would contain knowledge of an experienced housing official as well as sets of rules concerning the basis on which people are eligible for accommodation from the council's housing stock.

● Two British companies, Expert Systems International of Oxford and Helix Software of London, are working on a novel type of software that would advise on financial matters. With the system, banks and

other financial institutions would gain advice on, say, how to unravel particularly abstract sets of company accounts.

Companies selling various forms of expert systems include, in Britain, Logic Programming Associates and Logic Based Systems, both founded by a team from London's Imperial College, and Expertech, based in Slough.

Teknowledge and Quintus, both of California, and Programming Logic Systems, based in Connecticut, are among the small organisations selling expert systems in the U.S.

These companies normally sell their products in the form of expert-system "shells"—in which the customer has to spend up to several months putting information into the system in the particular subject in which he is interested. Such shells sell for anything between a few hundred pounds to (in the case of one product from Teknowledge) \$50,000. They can often run on small computers such as the IBM PC or an Apple machine.

Languages

Alternatively, the companies sell a special programming language (in the form of a couple of discs and a manual) that are especially useful for the construction of expert systems. That leaves the customer with the job of building his own system from scratch, rather than a householder constructs an item of furniture using a do-it-yourself kit. The most popular languages for this job are forms of Prolog or Lisp and they sell typically for a few hundred pounds.

Logic Programming Associates, set up by two Imperial College researchers in 1980, has sold about 4,000 copies of its own form of Prolog, called MicroProlog. It reckons about 1,000 have been for "serious" use either in companies or educational establishments—the rest have been bought mainly by hobbyists.

Mr Jonathan Briggs, manager of the five-person company, says that purchasers have included GEC, British Telecom, British Aerospace, Logica, IRT, Siemens, Standard Oil and AT and T.

"Few companies are using their systems in a routine way. But the technology is not more than about 18 months old in terms of it being applicable for use on small computers. We think we are about six months away from seeing the first real applications."



Marks and Spencer's customised version of the Psion Organiser

USES FOR POCKET-SIZE MACHINES

THERE IS NO shortage of companies trying to capture the portable computer market. The industry has seen everything including transportables, luggage, lap-held to plain old portables.

One company, the British software group, Psion, has carved a niche with a pocket computer with a performance that falls somewhere between a very sophisticated scientific calculator and a lap-held computer.

The computer, called the Organiser, is the size of a large calculator with a very small and rather fiddly alphanumeric keyboard. When Psion first advertised the Organiser in the colour supplements it was hard to see what use it had—other than as a sophisticated calculator. Although it promoted its merits as a diary and address book it seemed a

complicated way of doing a task that could be better performed on conventional paper.

Since the launch, a number of companies have found specific applications for the Organiser which may have a significant advantage over paper and would indicate a better potential market than the sceptics first imagined.

Marks and Spencer, for example, have just started using the Organiser as a means of providing a quick and cheap system of checking its new store chargecard at the till. The Organiser is programmed with a list of void cards from a 16K "datapack" which can store the numbers of up to 8,000 cards.

Wessex Publishing is selling a special version of the Organiser which can be used

by builders and quantity surveyors for cost-estimating on a building site. A surveyor, for example, can enter information into the Organiser the dimensions of an area to be concreted and the type of concrete and it will calculate and store the result.

Another application developed by Psion is helping doctors to prescribe drugs. The Organiser can store details of 250 drugs under 750 brand names with details of dosage and side effects. Quota whether this will prove as useful as the much more comprehensive monthly booklet, MIMS—no bigger than the Organiser—is doubtful. But Psion are also planning to bring out specialist medical applications devoted to anaesthetics, cancer chemotherapy and endocrinology.

JASON CRISP

Computers become easier to operate

THE BUSINESS world seems to be divided into two kinds of people. Those who find it natural and attractive to use the kind of professional personal computers that are available today—and those who don't. Yet, the industry argues, the personal computer will only fulfill its true potential when the "non-computing majority" learns to make use of what it has to offer. So, the argument runs, ways must be found to make personal computers more attractive to non-computing people, to improve the man-machine interface—especially as the industry wants to sell ever greater volumes of its machines.

In truth, but at a different level, there is every bit as much need to make the operation of computers simple for the computing specialists. This is why, in the interests of productivity, there is so much investment at present in "software engineering," the development of hardware and software which makes the programmer's job more effective.

One example is the popularity of the Unix operating system; it is by no means the best, but it does have a number of features much liked by the professionals for the productivity advantages it gives them. For ordinary mortals, however, who find personal computers difficult, even alien, the problem is quite different.

There have been some attempts to make the hardware itself more amenable—the desktop "mouse" pioneered by Xerox, the touch screen popularised by Hewlett Packard and the voice command system which ACT is building into its business computers, are typical examples.

For most suppliers, however, specialised software offers much greater potential for significant improvements in user-friendliness. Leaving aside dedicated applications programs—a specialised stockbrokers' system—for example, there are five types of software product that offer increased productivity in the office.

These are word processing, spread sheet, graphics, electronic filing and communications. For most suppliers, however, specialised software offers much greater potential for significant improvements in user-friendliness.

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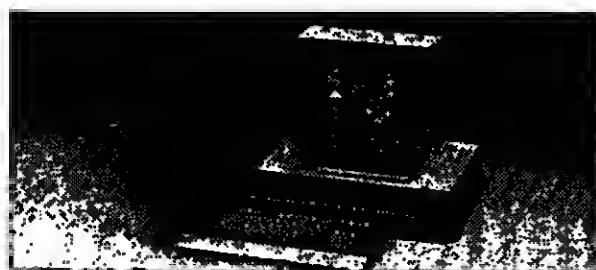
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These are word processing, spread sheet, graphics, electronic filing and communications.

FOUR REASONS WHY SORD IS THE FASTEST GROWING COMPUTER COMPANY IN JAPAN.

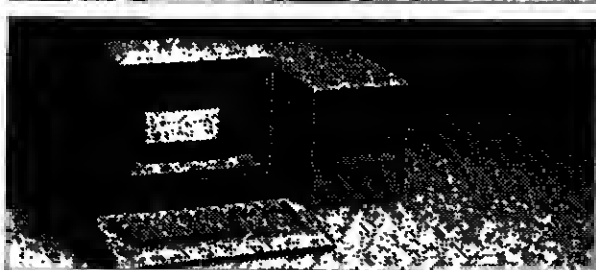
1 M68, 8-bit/16-bit desktop system.

Offers multiple operating systems and a CPU design which enables it to run both 16-bit and 8-bit software, including RM COBOL, BASIC, and all CP/M-based programs. Also Pan Information Processing System, which integrates spreadsheet, data base, graphics, text processing and programming functions into one system.



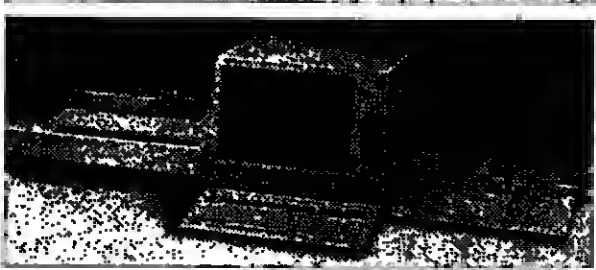
2 M2435X, 16-bit multi-user system.

Features multiple operating systems (including multi-user Concurrent DOS 3.1 and MS-DOS™ version 2.0), IBM terminal emulation and full language support (FORTRAN, LEVEL-II COBOL™, MBASIC, PASCAL, C, and Assembler). Also features PIPS.



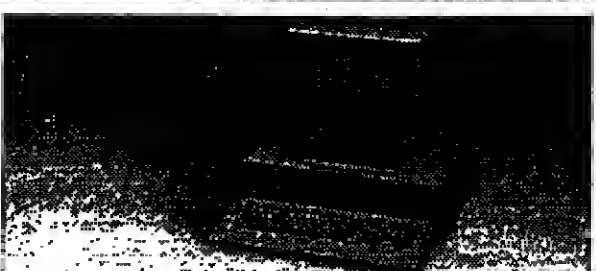
3 "CAD-BRAIN", Turnkey CAD Package.

Low-cost/high-powered hardware/software package that brings computer aided design within the financial reach of the independent designer. Also suitable, of course, for large firms. Features high-resolution 1024x780 dot color monitor, a complete range of built-in design elements ("primitives") and full graphics features.



4 M243EX, 8-bit multi-user system.

The cost-effective way to bring office automation to your whole staff. Features PIPS, BASIC, ANSI-74 COBOL, FORTRAN-80 and assembler. An excellent workstation for use in SORD's local area network (S-NET).



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